

"OFFICIAL JOURNAL OF THE UNITED STATES ATV SOCIETY"

AMATEUR TELEVISION MAGAZINE™

JANUARY 1984

VOL. 14 NO. 1

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"OUR 17TH YEAR"

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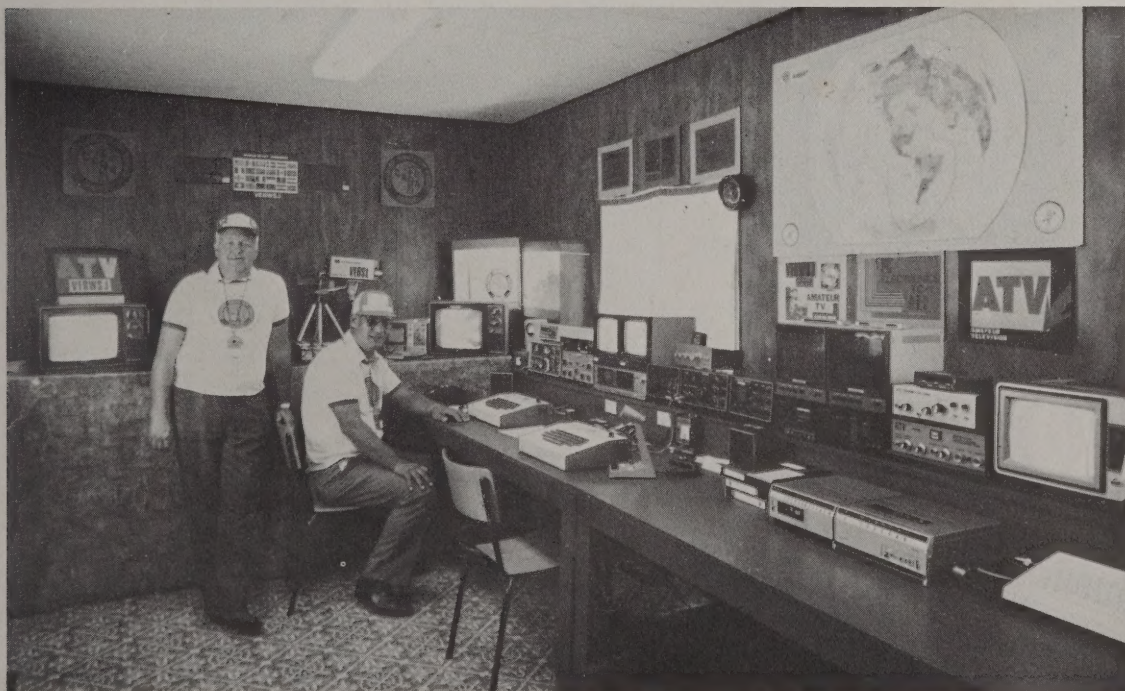
INTERNATIONAL HAM-TV MODES ADVANCE FORWARD!

SPECIAL CANADIAN ATV ACTIVITY REPORT INCLUDED
VIC CLARK W4KFC OF ARRL IS SILENT KEY

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"Blinky SSTV Tuner" Top Prize in January "A5" SSTV Contest (Details on Channel 35)...



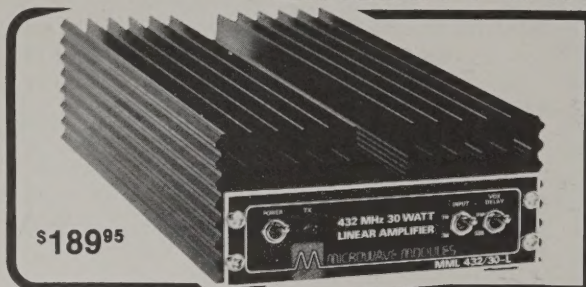
"A5 SHACK OF THE MONTH"

Max Farmer VE6SL and Abe MacKay VE6AMU man their FSTV/SSTV
Station, Calgary, Alberta, Canada
(Photo by John VE6CØD)

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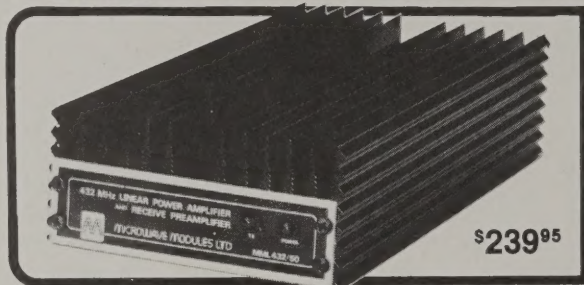


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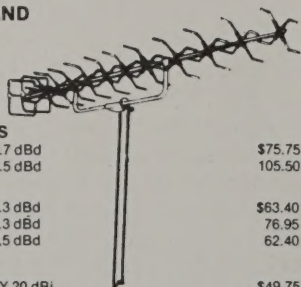
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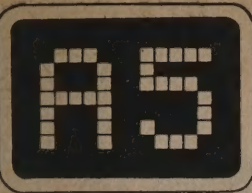
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JANUARY VOLUME 14 #1 1984 ISSUE INTERNATIONAL AGREEMENT REACHED

An International Trade Agreement has been reached with members of the British Amateur Television Club based in England and members of the UNITED STATES ATV SOCIETY sponsored by A5 ATV Magazine. Negotiations for this information exchange has taken place over several months of correspondence between John L. Wood G3YQC editor of CQ TV MAGAZINE (BATC) and Mike Stone WB0QCD editor / publisher of A5 ATV Magazine in the United States.

In a recent letter of 30 September 1983 from G3YQC, final plans were set in motion for "official" exchange of correspondence, article reprint privileges, commercial advertising information, membership publications and videotape programs.

Similar agreements already exist with French Amateur TV enthusiasts via the "Association Francaise d'Amateurs de Television a Longue Distance in Cenac (Latresne), France, the German ATV Group "AGAF" and "AMATEUR TV MAGAZINE" published by the DARC and the South Australian ATV Group. 50 copies of the USA publications "Everything You Always Wanted To Know About ATV *but were afraid to ask" (Revised 3rd Edition) and "TV Handbook for the Radio Amateur" have been sent overseas to be made available by the sponsoring groups on a retail level. Likewise, similar amounts of the British publications "AMATEUR TELEVISION HANDBOOK" by John Wood and Trevor Brown, (96 pages), "TV FOR AMATEURS" by G3YQC (52 pages) and "AMATEUR TELEVISION HANDBOOK VOLUME 2" are expected to arrive in January or February. Ad notices will be posted in "A5" with more details and publication availability. Limited copies will exist, those who wish to reserve copies may do so by sending their name, call sign and address information to A5 ATV MAGAZINE.



"ALL ABOARD TVRO" COLUMN RETURNS

"WE GOOFED!" We ran the Part #17 WA6RDA TVRO series on the SINGLE CONVERSION DOWNCONVERTER in our September 1983 Vol. #13-9 issue, but left out the graphic drawings! One interesting thing happened out of this error however. We were bombarded with mail at "A5" to this fact and even had more correspondence including a few phone calls, when we took a year-end break after running 18 straight articles (a year and a half!) of Gerard Wilson's MICROWAVE-TV series. All the time, I had often wondered if there really were interested reader's of this special regular column out there. We got our answer! Starting with this issue, WA6RDA is back. Thanks for your response... WB0QCD.

PAGE 1



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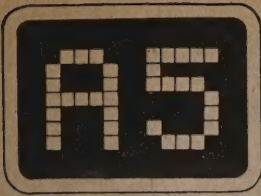
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INTERNATIONAL
AMATEUR TELEVISION MAGAZINE
News Roundup

ENOUGH IS ENOUGH

Southern California ATV club members apparently had enough of strong FSTV interferences originating from suspected radiolocation services operating in the 433-438 Mhz. frequency range. After several non-productive letter exchanges between N6AZV and the FCC's Long Beach branch facility (dating as far back as December 1981), and several attempts at offering technical help, the club decided to track down the interference signals itself. Several video "T-Hunts" were held (including aircraft searches by W6ORG) with reporting from local base station ATV'ers which resulted in mapped cross plotting references. The culprits were positively identified as Navigation Services, Inc. of Ventura, California operating pulse radiolocation signals from 8 beacons located up and down the coast transmitting on 433.6 Mhz. Findings were reported back to the FCC field office followed by an official visit verifying the interference to FSTV Amateurs. Citing FCC 90.101 and 90.103, Navigation Services, Inc. of Ventura, California was notified to cease transmitting the wideband pulse signals as it was interfering to the Amateur Radio Service of which it is required to operate only on a secondary, non-interfering basis. Complete coverage of this historical precedent will be covered in entirety in our February "A5 ATV MAGAZINE" Volume 14 #2 issue.

TV NEWS BLACKOUT...

The recent Grenada Invasion by U.S. Military Forces caused alot of confusion and hard feelings by some members of the News Media. Problems developed as a complete commercial news "blackout" existed with the only factual information coming out of the country was via Amateur Radio. It caused such a problem that the FCC issued a Public Notice on October 26th at the height of the invasion warning the radio and TV broadcast industry against the use of Ham Radio operators for commercial interests. With the national press media "blackout", several stations took to the airwaves showing Amateur Radio operators in communication handling 3rd party health and welfare traffic as it was about all they could do. Complete reporting of this problem was covered in the "W5YI REPORT" Vol.#5 Issue #22.

JUST RELEASED!

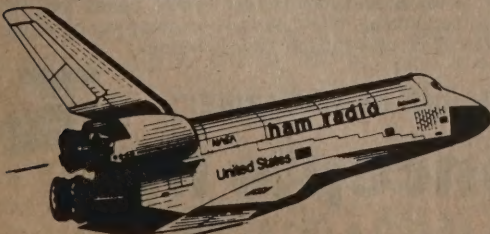
PC Electronics, longtime supplier of ATV equipment in Paxson, California has released a new marketing brochure entitled "TC-1 Plus". The 8 page information sales packet is loaded with descriptive information on the popular and successful TC-1 10 watt ATV transceiver package including schematic and technical operational details as well as helpful aides for the FSTV newcomer. The new brochure can be obtained by sending a SASE to PC Electronics, 2522 S. Paxson Lane, Arcadia, California 91806 (213) 447-4565.

STS-9 SPACE SHUTTLE COLUMBIA FLIGHT

History was made on November 28th, 1983 as the Space Shuttle Columbia STS-9 mission got underway (after two previous holdups) with a beautiful flawless launch at 11:00 am. eastern time. The 6-man crew included Dr. Owen Garriott W5LFL who made Amateur Radio history as he communicated via a two-meter, low-powered FM "handi-talkie" and portable antenna mounted on a window onboard the spacecraft to Radio Amateurs around the world! Worldwide News Coverage of the event was as anticipated nothing less than fantastic. Thousands of Radio Amateurs were able to "work" Owen and will be receiving QSL verifications as soon as logged information can be verified. Complete coverage of the STS-9/Owen Garriott W5LFL mission will be presented in our February Vol. #14-2 issue.

NEW VIDEO TAPE PROGRAMS AVAILABLE...

Complete edited videotape coverage of the recent Space Shuttle Columbia STS-9 mission is now available to Amateurs via the A5/USATVS Membership Videotape Library Service. A special long-play 6 hour VHS format (BETA covertable) program has been assembled from various news information sources including several hours of uncut raw video feeds from the SATCOM FIR Satellite. The tape covers preflight information and interviews, breakfast by the astronauts, trip to the shuttle, boarding of the spacecraft, launch, in-flight experimentation testing in the European built Space Lab, Ham Radio communications by W5LFL, touchdown landing and much more! Orders for A5VT#132 "THE SPACE SHUTTLE COLUMBIA STS-9 MISSION" can be obtained for the standard duplication fee rate of \$25.00 (tape supplied by member) or \$40.00 if duplicated on in-stock cassettes. In addition, another A5/USATVS videotape program A5VT#131 was added in December entitled "THE FLIGHT OF THE LEMONDROP", a 2-hour "hot-air" balloon ride with FSTV on-board (see our August Vol. #13-8 issue). For a complete, up-to-date listing of available "A5/USATVS" MEMBERSHIP VIDEOTAPE PROGRAMS, send a SASE to P.O. Box H, Lowden, Iowa 52255.



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ATV Converter*

The new ATV-2 converter has two super sensitive RF Pre-amplifier stages using the low noise MRF-901 (1.7 dB NF) transistors. The ATV-2 tunes from 420-450 MHz and down converts to channels 2, 3, or 4 on your standard TV set. The circuit uses durable microstrip design for stability and simplicity. The combination of a dual RF stage, the microstrip design, and the hot-carrier diode double-balanced mixer reduces UHF TV intermod problems. The local oscillator is varactor controlled for ease of tuning. An additional feature not found on other ATV downconverters is the incorporation of a post amplifier stage (6 dB min gain) following the double-balanced mixer. This post amplifier stage is used to overcome the conversion loss of the mixer. The Post-amplifier also delivers a signal level that is acceptable to the TV set to overcome the TV set's sensitivity threshold. The addition of the Post-amplifier circuitry is most noticeable on every weak signal reception. Overall the Communication Concepts ATV-2 downconverter is just what you need to enjoy amateur television to the fullest extent.

ATV CONVERTER:

ATV-2-Wired and Tested..... \$59.95 each
ATV-2-Pk Partial Kit..... \$44.95 each
ATV-2-PCB Printed Circuit Bd only..... \$10.00 each
ATV-2-I Instruction Manual Only..... \$5.00 each

Specifications

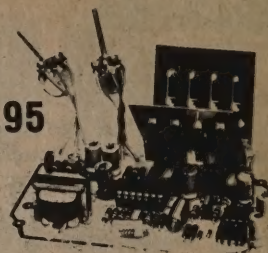
RF Input.....420-450 MHz
RF Output.....Channels 2, 3, or 4
DC Input.....+12 Vdc at 50 ma
RF Stages.....2 (MRF-901)
LO.....Varactor Tuned
Fine Tuning Range.....
.....Approx. 30 MHz
Pre IF Stage Gain.....6 dB Minimum

Audio Squelch Control

You have a squelch on your 2 meter equipment; why not add a squelch to your ATV monitor. Now you can avoid the major problem of operating ATV—the annoying hiss and static when the signal is not present. With the ATV squelch, you no longer have to turn the volume down when the signal disappears and risk the chance of missing a signal.

The squelch easily connects to the TV receiver audio stage without modification of the TV, since the squelch circuit contains its own audio output stage. You must provide your own speaker. Operator safety is provided by using transformer isolation between the receiver and the squelch circuit, thus eliminating the shock hazard when using a "hot chassis" type TV receiver.

\$34.95



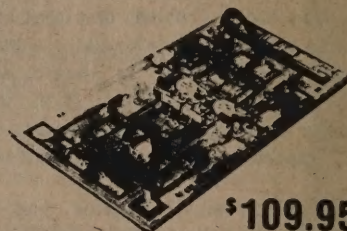
SIL-K Complete Kit—includes a detailed instruction manual, printed circuit board and all electrical components. Kit does not include case, speaker and regulated power supply (10 to 15 volts @ 250mA).

SIL-PCB Printed circuit board only **\$10.00**

100 Watt Linear Amplifier

Now you can get on the air with a high power 100 watt class B linear amplifier for SSB-FM or ATV on the 420 to 450 MHz band and still not spend a lot. This kit is described in Motorola engineering bulletin EB-67 and is available in a number of configurations. For full output, a minimum of 16 watts is required for excitation with an input SWR of not higher than 2:1. Output will maintain stability with a 3:1 collector mismatch at all phase angles. A designed-in low-pass filter suppresses the 2nd harmonic to at least 63 dB down. An external power supply capable of providing 28 VDC, regulated, at 10 amps is also required.

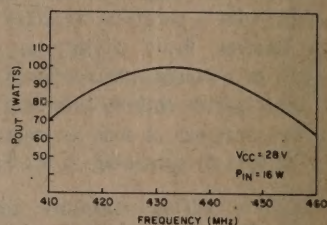
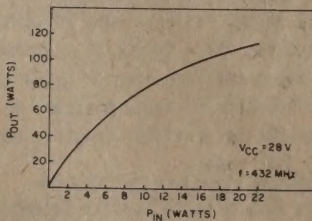
\$109.95



KEB-67-PK Kit includes detailed step-by-step instructions, printed circuit board, and all electronic components as shown.

KEB-67-PCB Printed circuit board only **\$14.00**

KEB-67-I Instruction manual only **\$5.00**



P.C. Boards

The FCC does not allow us to sell Broadband RF amplifier kits in the HF range, therefore we can only offer the printed circuit board and parts on a piece-by-piece basis.

140 watt power amplifier as described in Motorola engineering bulletin EB-63. **EB-63-PCB**

100-180 watt power amplifier as described in Motorola application note, AN-762. **AN-762 PCB**

300 watt power amplifier as described in Motorola engineering bulletin EB-27A. **EB-27A PCB**

Transformers, transistors and other parts are also available.

We also specialize in hard-to-find components.

In addition to our kits, we also stock parts for other Motorola application notes and engineering bulletins. We have an in-depth stock of Motorola VHF and UHF transistors. Underwood metal clad mica capacitors (Unelco). Kemet chip capacitors. Cambion RF chokes and Ferroxcube Ferrite beads and RF chokes plus other difficult to find parts. If you are having trouble finding a part, call us, we probably have it in stock.

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CQ FSTV - IS ANYONE REALLY THERE?

by WB0QCD

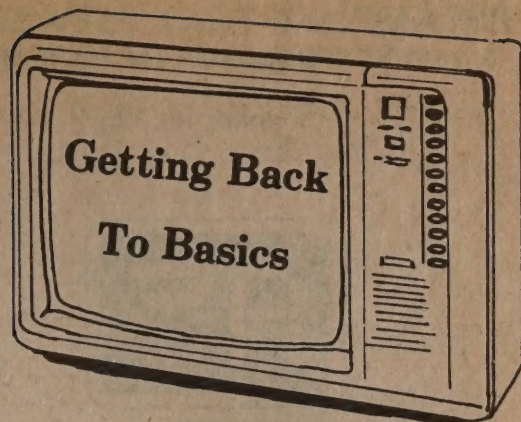
There is something strange about Amateur TV operators that most just can't seem to put their fingers on. Most curiosity seeking Radio Amateurs will wander and progress throughout several different modes of the shortwave hobby as much as their pocketbooks will allow. Some go right from CW to Phone, while others go directly to RTTY or Satellite communications. But those who venture into the world of Ham-TV seem to get "hooked" for life in a visual mode of communications that is as frustrating as it is rewarding. Perhaps that is why we are here? Having been associated with the ATV modes now for a few years, I would like to reflect a bit on some basic things that you ole' timers certainly found out long ago. Let us therefore direct this article to those newcomers just getting started on FSTV and to those who have been around a few years but refuse to realize what must be done to achieve satisfactory results.

Your TV Set...

The TV Receiver is the single most important piece of gear in the ATV shack. Yet, I see many operators who spend hundreds to thousands of dollars on preamps, hardline cable, expensive power amplifiers, color cameras, VCR's, etc. while continuing to be frustrated by poor signal sensitivity reception and sync lock errors on their own TV set. FACT #1-the best buys on the marketplace today is in the cheaper (foreign made) transistorized receivers that we all see at Drug and Discount stores from \$59.95 to \$89.95. Brands like Sansung, Sampo, Midland, Panasonic, Sony, Takyo etc. with very sensitive "front ends" especially notable on UHF-TV reception. "A5" has reported in past articles on popular TV sets used by ATV'ers today that seem to work well picking up marginal UHF-ATV signals. The "Liberty" model 5010 and Panasonics CT1112 Color models rank among the best. There are other TV's that do a fine job as well. The important thing is to get rid of that 10 year old set that you "borrowed" from the daughters bedroom or the wives kitchen and obtain one of the more modern state-of-art models. It will be the best addition you can make to ATV station!

Coaxial Cable...

What else can be said about having the best possible low-loss cable that carries the ATV signal from your antenna system to the downconverter that hasn't already been said before. I suggest reading Chapter Six of the "A5" ATV Handbook "Everything You Always Wanted To Know About ATV" but were afraid to ask, especially pages 33 and 34. Yes, good quality 50 ohm hardline is sometimes expensive and hard to find, but if you have done your homework and come up with the best multigain beam antenna system that will withstand the winter winds, it is a crime to let that signal get lost in the transmission line running down into the shack. Large quantities of 75 ohm Cable-TV 1/2 and 3/4 inch hardline are available and many published matching devices have been presented in



nearly all Amateur Radio journals. At best, even Belden 8214 type cable will lose over half of it's actual signal. And while you are lining up that good buy on hardline cable-DON'T CHEAT ON CONNECTORS! Use Type N's or BNC's and nothing less.

Predmps...

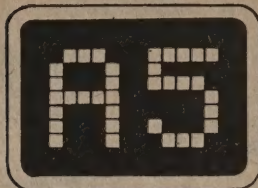
There is only one thing to say about PREAMPS; They work! We all know how the best retention gain can be seen if a preamp is placed near the antenna itself. But even if this isn't practical in your situation, a preamp in line even ahead of the downconverter will show increase of signal in most cases. And don't forget if you have long lengths of cable between the downconverter and the TV set or are using video or RF switches, splitters etc., a Channel 3 preamp even helps making up for the that signal loss. The price of GaAsFETs has come way down in the past year (some around \$10.00) and they should be used to "upgrade" the ATV Downconverter.

Because of the length of space required within this article, we could touch on several other areas that need basic attention such as cameras, lighting, audio, transmitters, etc. Perhaps in another article? Before we close, I would like to mention a bit about Ham-TV programming. All the time, effort and money spent on obtaining a reliable and satisfactory working FSTV station is almost worthless if the same test pattern, the same photo of a girl, or the same videotape is used time after time again to those ATV'ers watching "your show". Everybody knows what a Kenwood HF transceiver or what a BIRD wattmeter looks like. Put some creativity into ATV programming! Become "video flexible" with the use of low cost switchers and video control centers. Rapid scene changes from "live" camera to VCR home movies, computer programs or even SSTV pictures maintains interest greatly. We are all "hams" and what better way than to get in front of that ATV camera and "entertain"? Many ATV Clubs and Groups are obtaining some of our lecture and program videocassettes with regular showings "on-the-air". Imagine, showing a finely produced 6 part "Color Video Course" or the many different speakers at this year's YORK, PA. ATV Conference Workshop? Keep ATV interesting for all and you will keep the enthusiasm needed for "growth". Let it get boring and redunant and you'll be calling "CQ FSTV, Is Anyone Really There?" -WB0QCD

PREAMPLIFY THAT FSTV SIGNAL ON UHF!

3 GaAsFET DESIGNS FOR 144, 220 & 432 MHZ

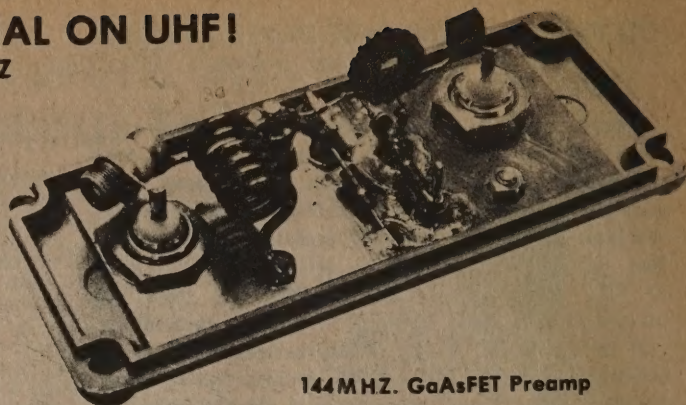
By William I. Orr
301 Industrial Way
San Carlos, Calif, 94070



PART ONE

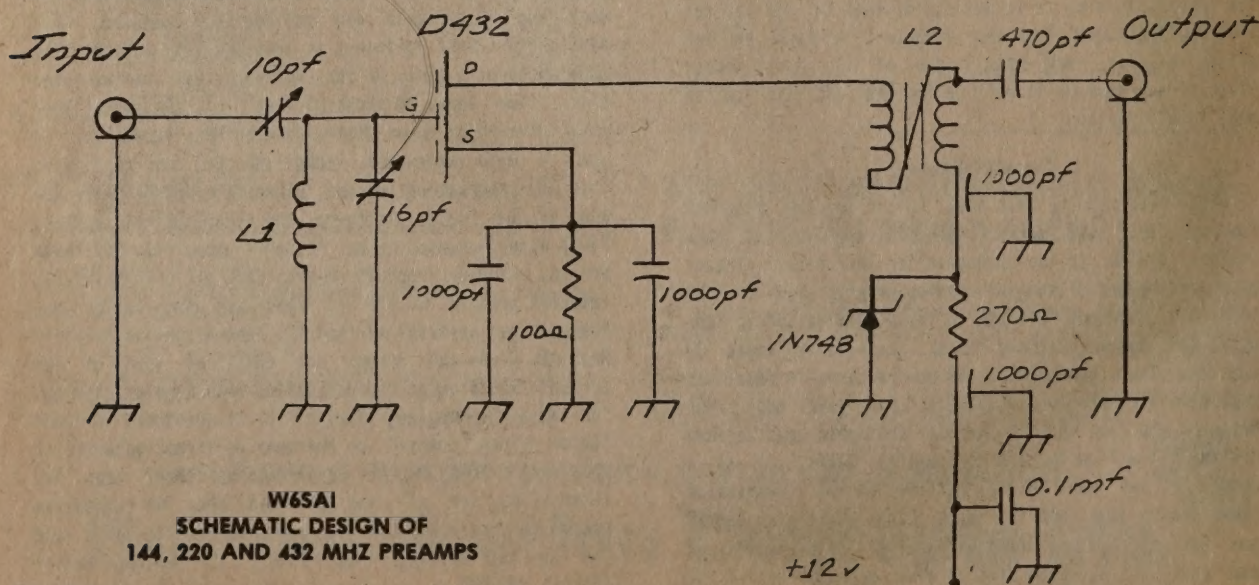
The "serious" FSTV operator will invest considerable effort, time and money toward a reliable "sensitive" ATV downconverter, an inline load amplifier to the TV set, a high-powered signal linear amplifier, low-loss hardline or heliax and of course the biggest, "high-gain" multi-element beam antenna system that can be afforded and will survive the worst local weather conditions. With such a system (or any ATV setup for that matter), the RF TV signal that is hitting the antenna can be tremendously "boosted" or amplified by a good preamp located near the top of the antenna. Even if the preamp is mounted "in the shack" noticeable picture level increase can be viewed dependent upon the true sensitivity of the downconverter device.

Shown below are 3 GaAsFET preamplifiers that were built by W6PO and were published in EIMAC NOTES (AS-49-31) a division of VARIAN in San Carlos, California. Designs are for 144, 220 and 432 MHz. Simple peaking of the tuned circuit of 426, 427 or 439.25 MHz. for ATV operation makes this amplification system worthwhile to the Amateur Radio TV enthusiast. All 3 designs are electrically the same so the same schematic can be used without modification.



144 MHZ. GaAsFET Preamp

The die cast enclosure used on all three preamplifiers was a BUD CUI23. A COMPAC DC 4001 enclosure can also be used. The most important thing to remember is to use absolutely the best components available for the gate circuit. The unloaded "Q" of the gate circuit should be very high to insure a low noise figure. (As an example, with a coil and capacitor circuit in the gate circuit of the 432 MHz preamplifier, the noise figure would not go below 0.7 dB. With the higher "Q" stripline, the noise figure went down to 0.47 dB. Perhaps stripline techniques on 144 and 220 MHz would improve these amplifiers as well.) The noise figure will be 0.5 dB, or lower, with all three preamplifiers. The GaAsFET wants to look into a 100 to 200 ohm load. The 4:1 transformer does the job very well by making a 50 ohm second stage look like 200 ohms. A tuned circuit could be used with more complexity, but the gain of the stage with the transformer will be 18-20 dB on 432 MHz and 20-24 dB on 144 and 220 MHz. No input to output circuit shielding was necessary when using the 4:1 transformer circuit. This transformer idea was suggested by K6OHM and W6YFK. All three preamplifiers were stable in or out of the box. Stability was checked with a spectrum analyzer, noise figure meter and on the air checks.



144 MHz

220 MHz

432 MHz

L1 6 turns #14 wire
1/4" (0.64 cm) I.D.
1/2" (1.27 cm) long

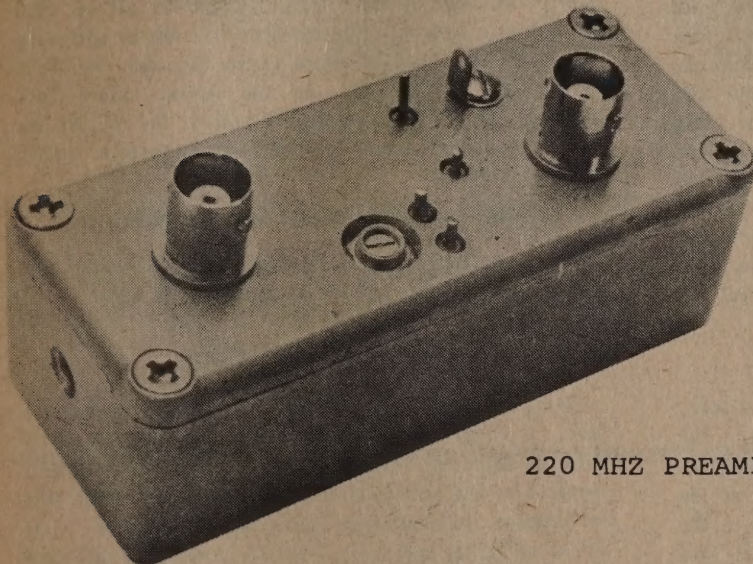
4 turns #14 wire
1/4" (0.64 cm) I.D.
1/2" (1.27 cm) long

Copper strap 2 1/4" (5.72 cm)
long by 0.6" (1.52 cm) wide
spaced 0.171" (0.43 cm) above
ground plane

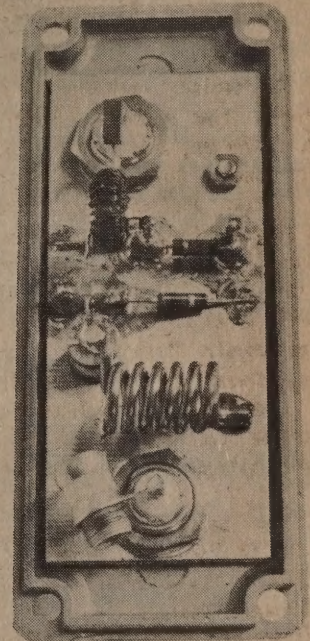
L2 12 turns of twisted
pair of #24 enameled
wire on Micrometals
T37-0 toroid connected
as 4:1 transformer

14 turns of twisted
pair of #24 enameled
wire on Micrometals
T30-0 toroid connected
as 4:1 transformer

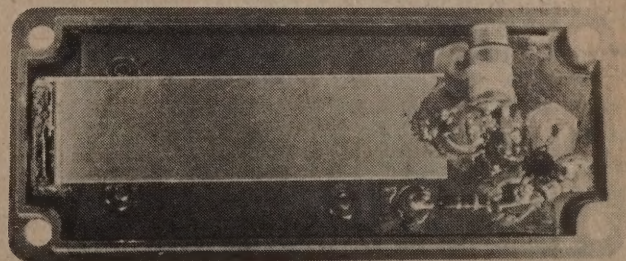
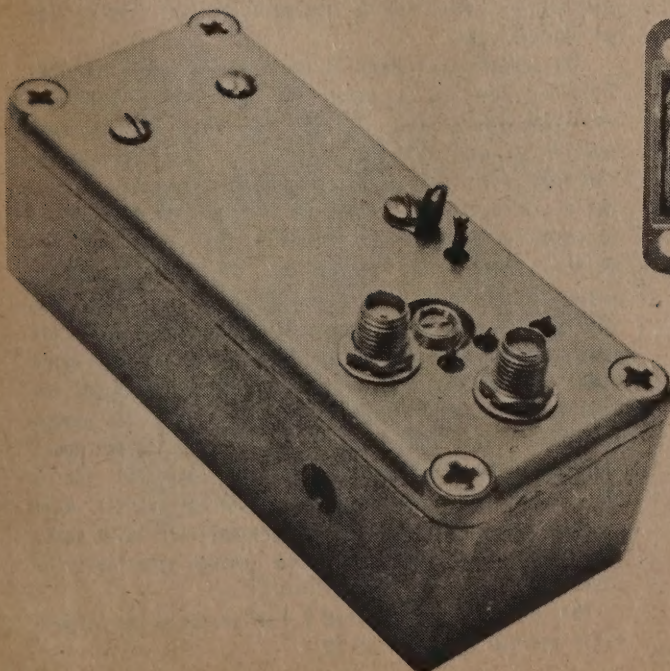
5 turns of twisted pair #30
enameled wire on 1/4" (0.64 cm)
diameter Q1 ferrite toroid
connected as 4:1 transformer



220 MHz PREAMPLIFIER



LAYOUT OF THE 432 MHz PREAMPLIFIER



EIMAC NOTES

301 Industrial Way
San Carlos, CA.
-94707

GaAsFET PREAMPS FOR 902 AND 1296

Continued Article for "A5 MAGAZINE" by William Orr W6SAI

PART TWO

The FCC is currently deliberating on a portion of the 900 MHz. band for Radio Amateurs. Several FCC S.T.A.'s have been awarded to UHF/Microwave experimenter's including some ATV'ers. Our previous article described GaAsFET preamplifiers for 144, 220 and 432 MHz. Here are two more, one for 902 MHz. and one for 1296 MHz. They can of course, be used not only for ATV applications but SSB, Satellite, EME and other DX applications as well. This segment comes from EIMAC NOTES (AS-49-36). William Orr W6SAI, has made available for many years, his findings of UHF and MICROWAVE systems via the EIMAC NOTES and can be contacted at 301 Industrial Way, San Carlos, California 94070. If you do decide to build up any of these "A5" monthly projects, please let us know how you came out.

1296 PREAMPLIFIER

This preamplifier, like the other two in this note, was designed for a narrow band application. The preamplifier does have reasonable gain outside of the amateur 1296 MHz band, but this was not the intent of the design. Only the S11 and S22 parameters were used in the design. The S12 and S21 parameters were ignored. S11 and S22, the input and output reflection coefficients respectively, were plotted on a Smith Chart. From the Smith Chart plot it was apparent that just a little inductance in the gate circuit would match things nicely. The first try yielded a rather easy input microstrip design, but would not provide a means to optimize the match for best noise figure. Therefore, it was decided to use a small high Q coil which could be changed, squeezed or stretched for best noise figure. The first printed circuit board had a pad on the board for the junction of the coil and GaAsFET gate lead. Later tests showed that this pad degraded the noise figure by 0.2 dB. The most recent design has the gate lead and coil lead floating in midair. Obviously this is not a neat arrangement, but in the trade off between noise figure and neatness, the floating junction won out.

The drain circuit is a simple stub matching technique one would use in matching a 50 ohm transmission line to a reactive load. The GaAsFET is the reactive load. A standard 50 ohm microstrip line was used to do the matching. A 51 ohm resistor in series with a quarter wave length of microstrip line is in shunt with the 50 ohm output lead. At low frequencies the 51 ohm resistor keeps the drain circuit terminated. At 1296 MHz the quarter wave stub is resonant and therefore presents a high impedance. Consequently, the 51 ohm resistor is decoupled from the drain circuit. Hopefully this stub circuit adds to the low frequency stability of the preamplifier. PAGE 8

Several preamplifiers were built with this circuit, and several different devices were used. The DXL2501, DXL2503, MGF1400, VSF9332, and D432 were tried. All yielded very good results. Noise figures fell between 0.4 and 0.6 dB. The gain measured between 15 dB and 19.5 dB. The MGF1400 shown in the picture measured 0.5 dB at a gain of 19.5 dB. The gain peaked at 1280 MHz and was 20.5 dB. The gain peak could be moved to 1296 MHz by adjusting the gate coil, but the noise figure degraded. The input return loss was 12 dB, and the output return loss measured at 25 dB in the unit pictured. The MGF1200 was not tried, but it should perform in an acceptable manner in this circuit.

CIRCUIT BOARD LAYOUTS ARE DOUBLE-DUTY!

These pictures of the 1296 MHz microstrip preamplifier may be used with the 902 MHz preamplifier as well.

UG141/V PREAMPLIFIER

Using the same design approach as in the microstrip unit, a preamplifier was built inside a small Pomona 2417 box. The object of this effort was to design a relatively inexpensive and easily-built preamplifier with acceptable performance. Johanson type tuning capacitors were ruled out as being too expensive. Microstrip was also ruled out because not all amateurs feel at home making such a board, even though the board can be easily etched or cut out with a Exacto knife. Most amateurs can promote some pieces of UG141/U rigid coax. The drain matching circuit was accomplished in the same manner as with the microstrip, except now the transmission line used is made of UG141/U coax.

The preamplifier shown in the pictures uses a DXL3501 GaAsFET. This is a power FET not normally used as a receiving preamplifier. The S22 for this FET is much smaller in amplitude due to the higher drain current for the same drain voltage. By changing the lengths of the drain matching circuit the D321, MGF1400 and MGF1200 can be used. For these other GaAsFETs the length of the UG141/U between the device and the 200 pfd coupling capacitor should be 1.11 inches long and the stub from the capacitor to ground should be 0.324 inches long. The gate coil should start out as four turns of #26 wire 0.052 inches in diameter (#55 drill); then adjust the coil for best noise figure. Be certain there is enough selectivity in your measuring system so as to not count the image frequency. This is especially important for a 28 MHz intermediate frequency. Use a quarter wave resonant cavity filter after the preamplifier to be sure. The preamplifier does not have enough selectivity by itself.

This preamplifier measured 0.4 dB on the noise figure meter and had a gain of 15 dB.

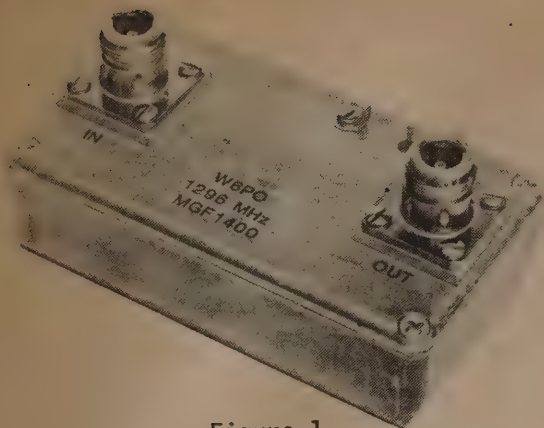


Figure 1

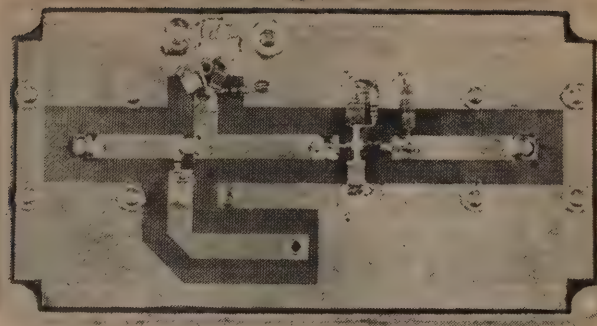


Figure 2

These pictures of the 1296 MHz microstrip preamplifier may be used with the 902 MHz preamplifier as well.

These pictures are of the 1296 MHz preamplifier using UG-141/U rigid coax and mounted in a Pomona 2417 box.

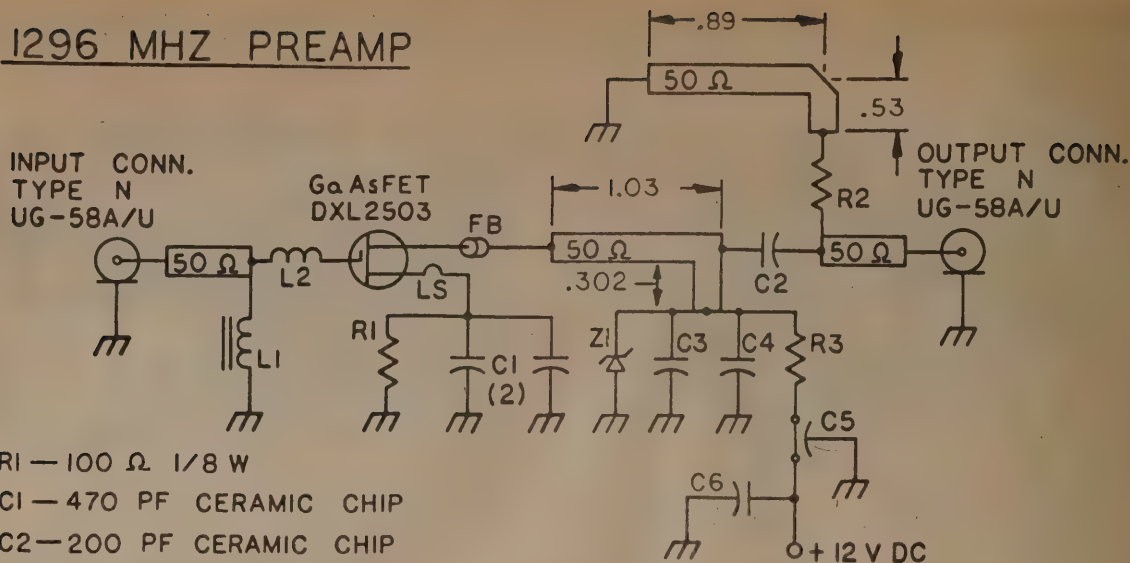


Figure 7

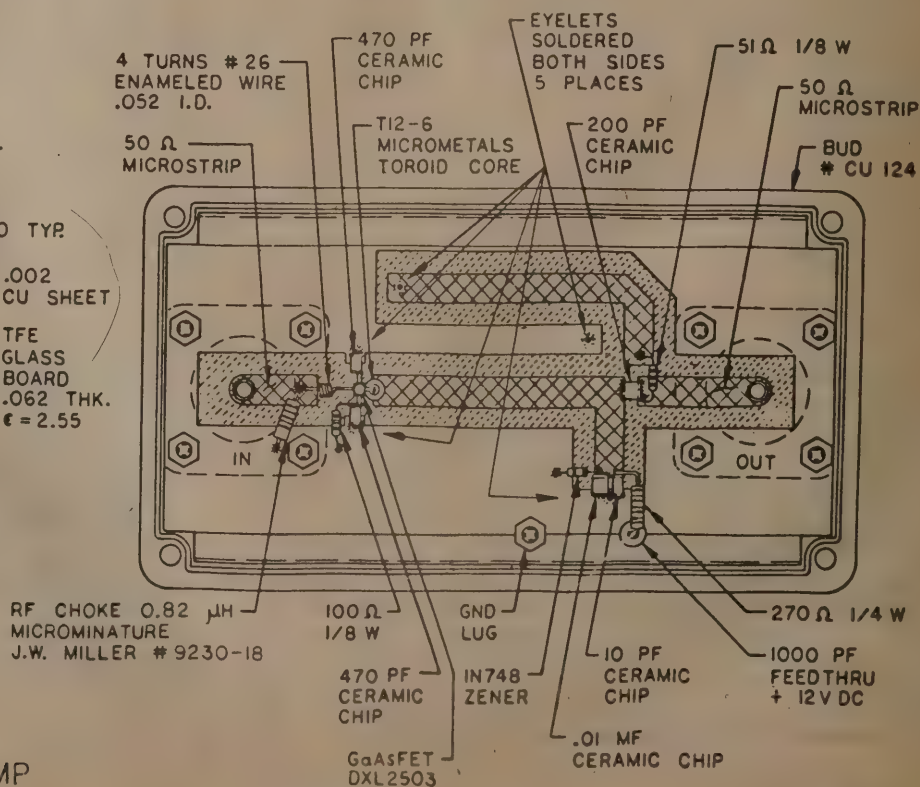
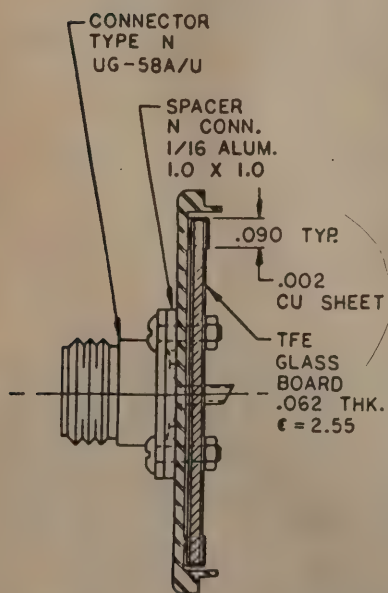


Figure 8

1296 MHZ PREAMP



- R2 — 51 Ω 1/8 W
L2 — 4 TURNS CLOSE WOUND
#26 ENAMELED WIRE
.052 I.D.
LS — INDUCTANCE OF SOURCE
LEADS ON GaAsFET
FB — T12-6 MICROMETALS
TOROID CORE
R3 — 270 Ω 1/4 W



W6PO

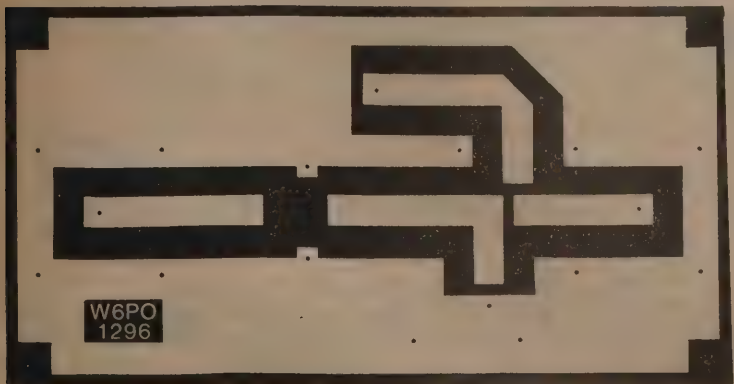
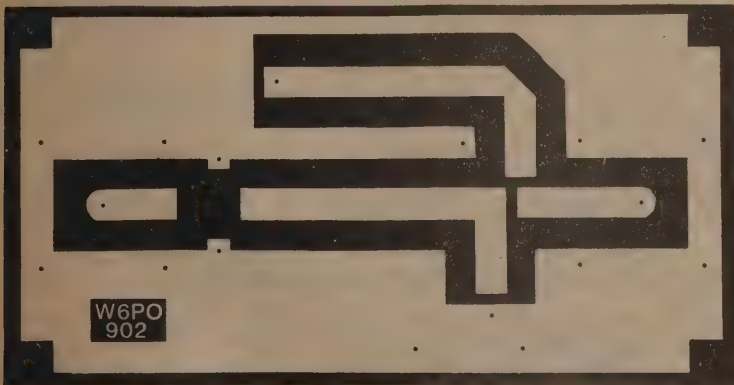
1296 MHZ PREAMP

902 MHZ MICROSTRIP PREAMPLIFIER PROJECT

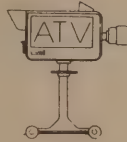
The design procedure was exactly the same for this unit as for the 1296 MHz unit. Tests were run with the DXL2503 and VSF-9332. With the DXL2503 the gain was 19.5 dB and a noise figure of 0.5 dB. Also, with the DXL2503, the input return loss was 12 Db and the output return loss was measured as 27 dB. The MGF1400, MGF1200, D432 should work in this circuit quite well.

A circuit using the U6141/U technique was not constructed. However, such a unit could be made with the line length from the device to the 200 pfd. coupling capacitor of 1.64 inches. The stub from the capacitor to ground should be 0.457 inches long. With these line lengths, the MGF1200, MGF1400, and D432 should perform quite well. The gate coil should start out as 9 turns #28 wire on a 0.052 inch form. A number 55 drill works very well. The coil is then adjusted while observing the noise figure.

These pictures are of the artwork used to reproduce the microstrip boards for both the 902 MHz and 1296 MHz preamplifiers. It is possible to photograph these pictures directly to get a negative suitable for exposing a photosensitized board. Also, the board can be cut by an Exacto knife to the outline required. The unwanted pieces can be removed by heating with a soldering iron and pulling the copper foil off. A mechanical negative can be made by using Rubylith.



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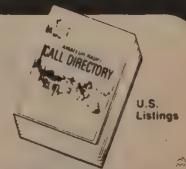
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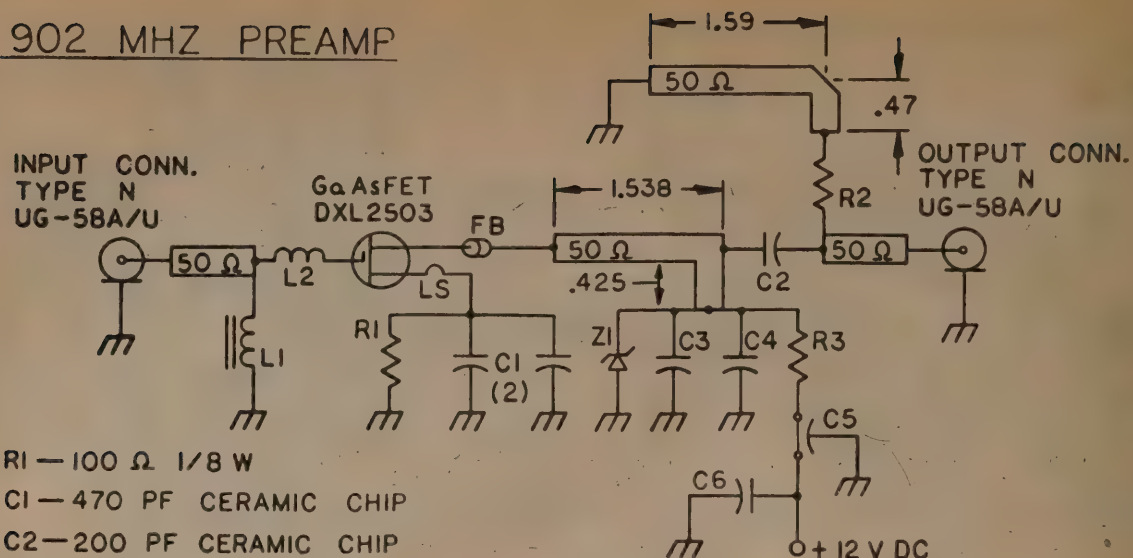
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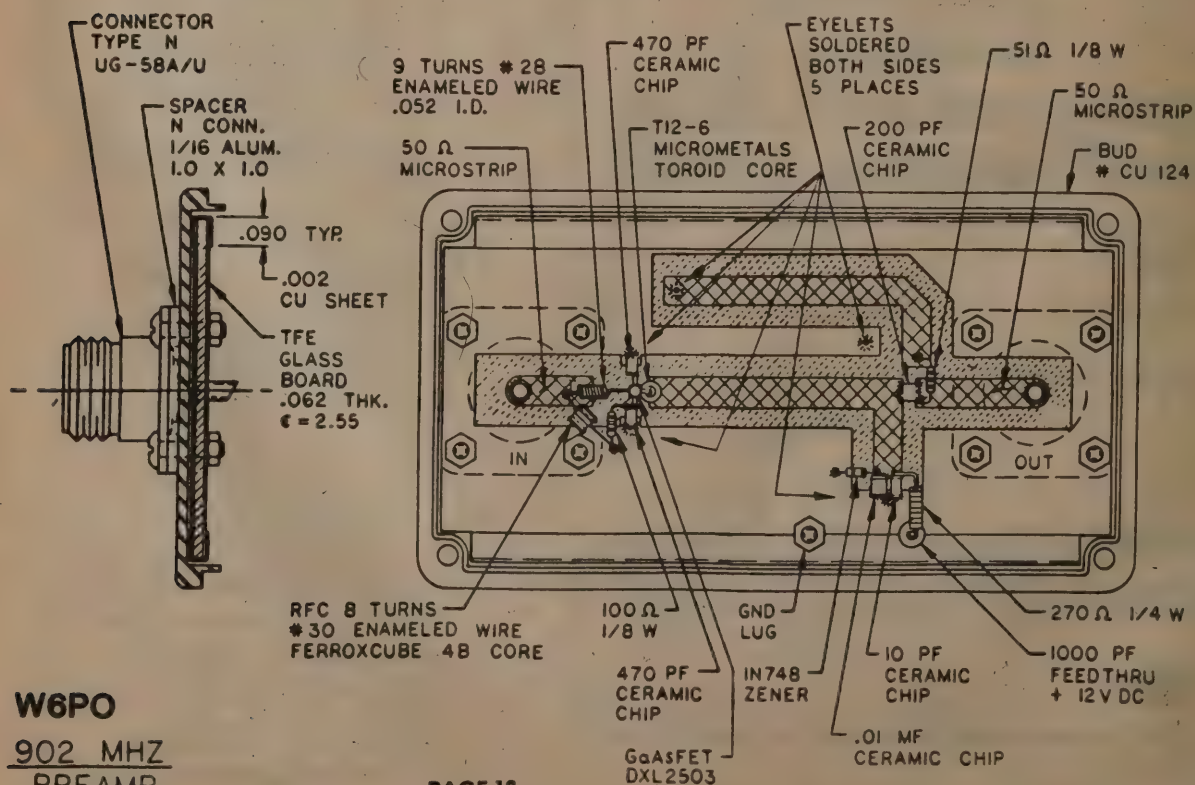
"SAY YOU SAW IT IN A5 MAGAZINE!"

902 MHZ PREAMP



- R1—100 Ω 1/8 W
 C1—470 PF CERAMIC CHIP
 C2—200 PF CERAMIC CHIP
 C3—.01 MF CERAMIC CHIP
 C4—10 PF CERAMIC CHIP
 C5—1000 PF FEEDTHRU
 C6—0.1 MFD CERAMIC
 Z1—IN748 ZENER DIODE
 L1—RFC-4B FERROXCUBE
 # 30 ENAMELED WIRE
 8 TURNS

- R2 — 51Ω 1/8 W
L2 — 9 TURNS CLOSE WOUND
#28 ENAMELED WIRE
.052 I.D.
LS — INDUCTANCE OF SOURCE
LEADS ON GaAsFET
FB — T12-6 MICROMETALS
TOROID CORE
R3 — 270Ω 1/4 W



ATV KITS AND MODULES

- VM-2 VIDEO MODULATOR** — Wideband collector video modulator for solid state exciters such as those from GLB and Hamtronics. Input for 4.5MHZ audio sub-carrier. 2 1/2" x 1 1/2"; **\$15.50** kit, **\$19.95** assembled.
- A-2 4.5MHZ AUDIO SUB-CARRIER** — Accepts audio from VCR or GLB audio processor to provide ATV audio on TV set. Has on-board voltage regulator and shielded inductor. 2 3/4" x 1"; **\$19.95** kit, **\$25.95** assembled.
- SA-1 VIDEO SYNC AMP** — Provides separate video sync gain control for VM-2 above or SE-1a transceiver. Useful when driving solid state amps. 1 3/4" x 1 1/4"; **\$15.95** assembled, **\$12.95** kit.
- DC-1 UHF CONVERTOR** — Varactor tuned with 2 RF stages. **NE64535** input standard. Double sided stripline design. Outputs to TV ch. 2, 3 or 4. Can be tower mounted. 11 - 14vdc. 2" x 3". **\$39.95** kit, **\$54.95**, assembled, **\$89.95** complete in box.
- P-1 WIDEBAND LOW NOISE UHF PREAMP** — Uses **NE64535** transistor for min. 18db gain and 0.6db noise figure. Covers 420-450MHZ band. Other frequencies received with change in input inductor. 2 1/4" x 1 3/8"; **\$22.95** kit, **\$31.95** assembled.
- LA-1 UHF AMPLIFIER** — Uses 15 watt MRF641 transistor with 7.8db gain @ 470MHZ. Stripline inductors with on-board pin diode antenna switching for a receiver. Designed for wideband color video with exciters such as the GLB T450L that provides up to 3 watts drive. Drilled and tapped heatsink included (4 1/2" x 1 3/4"). 1 to 3 watts drive typically gives 6 to 18 watts output. 12 - 14vdc operation @ 4 amps max. Double-sided board is 4 1/2" x 2". **\$79.95** assembled with test data.

LA-45 UHF AMPLIFIER — Uses MRF646. Input power of 6-15 watts typ. gives 20-50 watts output. Biased for linear operation. Kit includes all parts, instructions and 4.2" x 3" double-sided stripline board. Needs 12-14 vdc @ 9 amps max. **\$64.95** kit. 4" x 5.5" x 1.75" heatsink **\$15.00**.

GLB T450L TRANSMITTER — 4 1/2" x 2" RF board typically supplies 2-3 watts FM output, 1 - 1 1/2 watts average video RF output. Changes for wideband video modulation provided. Comes with crystal for 439.25MHZ, with other frequencies available upon request. Also includes separate 1" x 4" audio processor board which supplies audio for FM modulation or for the A-2 4.5MHZ audio kit above. 12-14vdc @ 2 amps max. **\$69.95** kit, **\$89.95** assembled and tuned. *Kit now with pre-wound coils*

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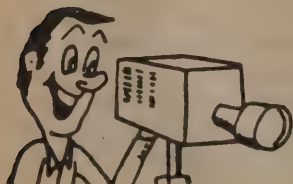


AMATEUR TV ON THE THE CANADIAN SCENE

"Our Neighbors to the north are active
and looking for DX contacts!"

In Quebec, Canada...

FSTV in the Quebec City area has been quite active in this area from the past 2 years or so on 439.25 MHz. Operators decided to form a video comity at the local club last winter and agreed to put up a repeater to promote video and give a better coverage for those interested in that field. Mostly each member was assigned a duty to bring contribution to the project. Cooperation was simply fantastic. After a few months of hard work trying to tie all the parts together, we finally inaugurated our ATV Repeater. The first day of June 1981. No use saying that all of us were proud that day. At this moment 10 stations are seen regularly and at least a dozen more can monitor the activity. The repeater is located on top of a 10 story building and has a coverage of about 30 km. Most of the equipment (80%) is homemade and the rest is in kit form. VE2RGT/R video inputs on 439.25, outputs on 1278.75 MHz. Audio inputs on 443.75 MHz., 1283.25 MHz. We are running about 22 watts. The system is located atop the 10 story Laval University Tower. A 2 hour VHS Videotape on our system is being sent to the AS/USATVS library for other members to view. Gilles Chenette VE2BRN



**BRITISH
COLUMBIA
FSTV/R**

"VE7RTV"

The VE7RTV is made up of P.C. ELECTRONICS modules and operates on 1278.75 MHz input and output of 434.6 MHz. Reason for this is interference at the site where it will be located. Antenna for the repeater consist of a "homebrew" horizontally polarized Alford Slot for 1241 receive and a 4 bay dipole for 434.6 transmit. The initial tests will be carried out for about 1 month at VE7CIM Bill's Qth in Burnaby, a neighboring municipality. The permanent home will be on Mount Seymour on the North shore of Vancouver at an altitude of 3600 feet above sea level. The repeaters and site is owned by the British Columbia FM Communications Association. Housed on this site are two 2 meter UHF repeaters—a UHF 450 MEG repeater—a 220 MEG repeater, another 450 link down to the city for auto patch link and then of course the ATV repeater. So you can see there is lots of RF up there, not to mention numerous commercial sites also in the area on the mountain. 73' Cary Miller VE7CFC



Don Person VE3KRO and XYL flew into the Peoria, ILL. AS Midwest Conference in 1982 from Thunder Bay, Ontario!

WHAT EVER HAPPENED TO VE3BWW?

"I am still alive and well! I moved from Toronto to Niagara-On-The-Lake which is located across the river from Buffalo, NY. I sold all my ATV gear, tower and antennas and plan to start all over again with new equipment at my new QTH. We visited Florida for awhile stopping by to visit Mike Silvernail WB4BNJ and leaving with a dandy little SE1a FSTV transceiver under my arm! I am looking to form an active ATV Group in the Niagara Peninsula area and would appreciate hearing from anyone else that might be interested. As soon as I get settled, I start writing for 'AS' again!" -George VE3BBW, P.O. Box 1383, Niagara-On-The-Lake, Ontario, Canada L8S1J8



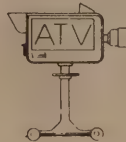


5000 SCOUTS VISIT VE6WSJ VE6SL/VE6AMU ATV

"ELEKTRON" AREA EXPOSES SCOUTS TO HAM-TV AT XV WORLD JAMBOREE IN CALGARY, ALBERTA

Boy Scouts from around the World were exposed to High Technology during the 10 day XV WORLD JAMBOREE held July 4th to 14th, in KANANASKIS COUNTRY nestled in the Rocky Mountains just 35 miles west of CALGARY in the PROVINCE of ALBERTA. The CALGARY AMATEUR RADIO ASSOCIATION using the special call VE6WSJ hosted the "ELEKTRON" exhibit located in the "GATEWAY TO THE WORLD" area and demonstrated to thousands of Scouts Computer Technology, a Satellite TVRO system, a weather station, Telidon, sophisticated telephone systems and of course Amateur Radio at its best. Amateur Radio was displayed in three separate stations, the first was a visitors station set aside for any licensed operator to use, the second was the official JAMBOREE station where 185 Countries were contacted as well as all the U.S. states and Canadian Provinces. Wow, imagine working DXCC, WACAN, WAC and WAS in just ten days. Thanks has to go to dedicated operators from around the world, who were on-site, such as Dominique F6EPY from France, Richard PA8BAR from Holland and Shelly K2BS from the United States as well as other Amateurs from the U.S. and the Calgary Amateur Radio Association. The third station was the SPECIALIZED COMMUNICATIONS AREA of Ham Radio and included SSTV, RTTY, ATV, and Digital Communications. More than 14,800 Scouts World-wide were on site and approximately 5000 of these visited the "ELEKTRON" area where they were shown the COLOR SSTV and COLOR ATV displays, this display area featured two fully operating color SSTV stations, one by Abe Mackay VE6AMU and the second by Max Farmer VE6SL, both these Amateurs dedicated 3 weeks of their time to show SSTV and ATV in full operation and working other Hams. I had the Honor and privilege of meeting and showing the station to Lord Baden Powell, grandson of the founder of Scouting, B.P. as he is known, was overwhelmed by the Ham Radio display and had to be pryed away to

finish his tight schedule around the JAMBOREE by Len Jarrett VE3MYF our "ELEKTRON" liaison to SCOUTS CANADA. We also had the company of a well known "Oldtimer" in SSTV, Harry W2GND and his wife who worked throughout the "ELEKTRON" project and it was indeed a pleasure to work with this couple. The overwhelming success of our "ELEKTRON" project was only possible due to the dedication and hard work by over 100 Amateurs and volunteers. Max Farmer VE6SL



Fast Scan Television Activity In Manitoba, Canada Area

Just a note to bring "A5" readers up to date with what is happening on ATV in the Winnipeg, Manitoba area. Our plans here call for two local ATV stations by late fall. The ops will be myself and VE4ADG, Don. We have a repeater site and hope to put a repeater on the air in the Spring. As you can imagine ATV and SSTV activity are pretty sparse up here. I know of only one other SSTV station besides myself and I haven't heard him for a while. There is some problem with ATV here as I read about a power limit within a certain distance (100 miles) of the Grand Forks, N. Dakota Air Force Base. Power max is 50 watts. This limits any American stations within range of us to 50 watts. As the nearest Canadian city is 120 miles West, we will have to hope for some real DX. We are 130 miles N. of the Grand Forks AFB, so we have little room to work South. However, situations like this are what Amateur Radio is about. We'll find away around it, or just limit ourselves to EAST and WEST contacts. There is no power limit here so we can use the allowable maximums if needed. I guess for our present needs, a few watts will do. As for SSTV, I have heard more activity in VE6 than in past years. I hope that's a good sign. I now have my 10 meter endorsement so I can operate SSTV on 28.680. I'll be there on a pretty regular basis. By March '83 I should have my advanced ticket so I can operate anywhere on the Ham bands. Thanks for your fine magazine and enjoyed the contest. Allan Tucker VE4AD

(Photos by VE6COD)



VE6SL Demonstrates SSTV to a foreign delegation



VE6AMU Shows off ATV communications equipment

TIGHTEN VIDEO ERROR TOLERANCE

A LOOK AT WHAT REALLY HAPPENS TO THAT VCR SIGNAL
by Henry Ruh KB9FO

The following article was written by Henry Ruh KB9FO, former publisher of A5 ATV Magazine. It was published in the "TV TECHNOLOGY" November 1983 issue. It is presented here for consideration of the Amateur TV Enthusiast.

In the October issue of TVT, we explained the NTSC color signal, color framing and a little on how this relates to video tape. In this column we will investigate the problems of video tape.

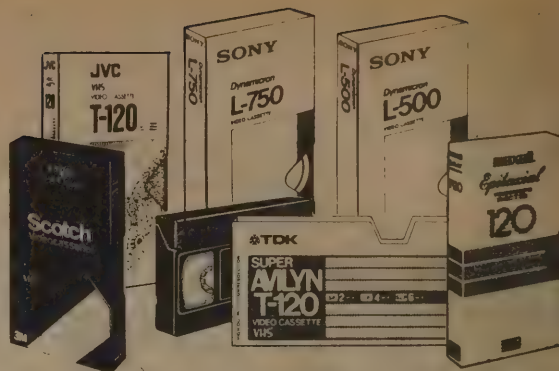
I will use a very simple analogy to explain the various types of time errors one encounters with video tape. First, there are three rates of error—for simplicity's sake, we will call them long, medium and short. There are also two variances, which we will call fixed or constant, and variable or acceleration (see Figure 1).

Now, our example. Imagine a car, a trailer, a flat road and a series of targets at regular intervals along the road. Both the car and the trailer have a cannon mounted on them fixed so that with no other variables, if the car is stationary and the target is stationary, we will hit the bull's eye every time we shoot. A rather dull game at this point.

Now imagine the target is really the house sync generator output, the bull's eye is perfect horizontal and subcarrier sync, our car is the video tape machine, and the cannon is the video output sync pulses.

If we have no servo lock ability on the VTR, we will have a gross error over a long time period (which fits into box F). Since the machine (car) can vary speed and produce "shots" at random, there is little likelihood that we will hit the target (by synchronous). Each shot could be ahead or behind the target, and over a long period of time we may have fewer or more shots than targets since our speed could be faster or slower on average than if we were to drive at a constant speed equal to the target time. If you were to feed fixed external sync to the picture monitor, and the playback video to the video input of the monitor, the picture would roll and dance around the screen in a somewhat random manner.

If we were to capstan lock the VTR we would have a constant speed, but we could still be timed between targets and not in time with the target (so this fills box C). Here, although we have the same number of shots and targets, we are still not necessarily at the right point at the right time. Our playing time will be correct, but we may be a little early or late with each shot.



Now we move the cannon to the trailer. The trailer is hooked to the car with a flexible link. The car is running at a constant speed and we are synchronized to trip wires for each target. Each shot is fired at the right time when the car is in the correct position relative to the target, and the car speed is constant, so we have the same number of shots and targets. But because of the flexible link to the trailer, the shots tend to vary a little although all hit some part of the target. This is more or less like drum and capstan lock in that the sync pulses from the tape are now time co-incident with the house sync (locked) but there is a residual jitter. This is box E.

Now we replace the flexible link between the car and trailer with a fixed link. Now we have perfect synchronization between the cannon and target and only the bumps on the road affect the actual "score". The shots all hit the target but all in the same area, just outside the bull's eye. There is a small randomness caused by the bumps in the road, which in turn cause small instantaneous speed errors. This is box B.

Now we shock mount the cannon on the trailer and gyro stabilize the cannon mount. Now we have a much closer group to our shots, but there are still small errors, which have been smoothed or averaged out so that all our shots fall at the same point on the target, to one side of the bull's eye. This is box D.

Now we resurface the road as well, but there is a slight residual error in speed as our tires slip. So we synchronize the trailer cannon with the target and hit the bull's eye every time. This is box A.

What we have done is progressively tighten the tolerance of time and place of our cannon shots until the target is being hit correctly every time. Only small residual errors cause by wind, gravity changes, or minor variances in powder burning speed or powder load, would create any error. We can never remove all the variances, but we can make them very small.

The author, a former top-10 radio CE, is now with Group W. He can be called at 203-965-6332.

	short	medium	long
fixed	A	B	C
vary	D	E	F

Figure 1. Tape variances vs rates

In video tape we have the same sequence of corrections. First, we have long term rate errors. The overall time is not controlled and the playback is always close but never on target except for the briefest of moments. There is no servo lock and only the forgiving nature of the TV set sync circuits allows us to watch the picture.

As we introduce capstan and drum servo locks, we produce a more stable playback, and the program length is precisely controlled. But there is still residual jitter due to mechanical tolerances and noise in the electrical signal. We add horizontal sync time base correction and remove the jitter noise, but still have a residual velocity or color phase noise. Finally we time base correct the color component, remove the velocity error and reference the tape burst to house burst. Only the minor electronic noise remains.

But there is always noise. And the more noise, the less accurately we can correct the final picture. If you look at the signal from a test generator on a vectorscope, you should see nicely arranged tiny dots at the color vectors. Each dot is precisely over the position of the last dot. The spread is very small and in effect the S/N -the positional error from line to line and field to field- is so small that you cannot see the individual positions. You have a very tight "shot pattern."

Now, record that signal and play it back. With any luck, you will see a much fuzzier "dot" as the shot pattern begins to grow. Once in a while you may see an individual stray shot which is outside of the main pattern. Now dub the tape and play the dub back. The electronic noise becomes larger and the "dot" has grown to a fair sized blur. More and more "stray shots" will become visible and you will notice a spreading of the vector. With each generation, the spread becomes bigger and bigger. This is because we can never remove the noise completely and it slowly begins to build up. Since each generation is only corrected to the extent that the electronic "stabilizers" can detect the errors, and there is always some residual error, this error continued to build from generation to generation.

Now the final bit of information. The TV signal is corrected in two parts. There is the luminance portion and the color portion. How these two signals get massaged back into shape depends on the recording system used. There are two main systems, direct and heterodyne.

Direct recording means that the signal was not separated when it was recorded and the full bandwidth luminance and color information was kept as a single signal. This is what you find in quad recordings and type C format machines.

Heterodyne processes separate the color from the luminance signals and converts the color information to a new frequency band which is inserted into the record signal. On playback, the "color under" signal is re-combined with a local oscillator to bring it back to 3.58 MHz, and remixed with the luminance signal.

In the direct color mode, the jitters and errors of the luminance and chroma are in step, that is, in phase with each other, since they are being acted upon by the same variables. The phase interlace of the chroma is retained and is still referenced to the horizontal sync. When you recover the signal, however, the 3.58 MHz signal is no longer stable since it has the jitter component added. You have unstable color. Observe the "demod out" on a quad VTR and you see this error easily.

In the heterodyne process, the local oscillator used to recover the color signal is free running, and the heterodyne process produces a stable 3.58 color signal because the color time error is cancelled out in the dual heterodyne frequency changes. But the luminance is still jittering, so the phase relationship between horizontal sync and the color signal is lost. The two signals are no longer locked together in phase interlace, so you need to correct this signal differently than you would correct the direct color signal, which never lost phase lock.

The advantage of the heterodyne process is that, because the machine can be bandwidth limited, using a slower tape speed/head speed, operating costs are lower. The disadvantage is that you now have to re-separate the color and luma signals in order to correct the luma jitter which is different than the chroma.

Now you have all the problems; next time, all the solutions! KB9FO



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Two line standards -625 and 525- together with three color encoding methods- PAL, SECAM, and NTSC- prevent direct tape exchange except within the same system. Standards conversion for amateurs can be accomplished through the camera of one system televising the CRT of another system. Alternatively, multi-standard VCR's feeding multi-standard TV's / Monitoring permit one amateur to view another's tapes directly. Electronic standards conversion is available for international commercial program exchanges using very expensive and complex electronic gear. Amateur television enthusiasts may be expected to solve this problem at the amateur level as occurred in home satellite TV reception. Multi-standard domestic grade equipment is available in the United States.

One amateur TV operator and USATVS member / advisor WB2LLB/4, describes the way to go and the joys of contacts on tape with France, England, Scotland, Wales and Australia. His articles have been previously published in A5 ATV Magazine (July 83, Vol. 13 #7) and video tape programs are available via the USATVS Videotape Library (Send SASE for details.)

WB2LLB/ ATV Multi-Standard Video Equipment; SONY KV-2032 ME 3 color system TV receiver, AKAI VS-2 EGN 5 Standard VHS format VCR, HITACHI Color Camera PAL VK-C830E, HITACHI Portable VHS PAL VCR VT-6800E, HITACHI tuner timer VT-TU45E, NTSC equipment includes cameras, VCR's and monitors by JVC, Panasonic, RCA, Hitachi and Sanyo.

Capabilities; Play-back of NTSC -3.58, NTSC -4.43, PAL, SECAM-L, SECAM-B,G, VHS format, NTSC to NTSC duplication; PAL to PAL duplication, PAL and SECAM to NTSC conversion by camera, SECAM and NTSC to PAL by conversion by camera. Programs can be originated in PAL and NTSC. With the arrival of SECAM-L Camera and SECAM-L portable VCR, SECAM programs, tape duplication and conversion into SECAM from PAL and NTSC will become available. If your interested in contacting WB2LLB, write to Dr. John Fox, 3652 Cedar Bend Road, Mobile, Ala. 36688.

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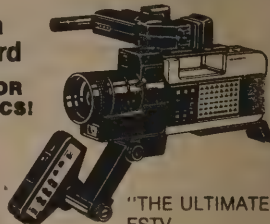
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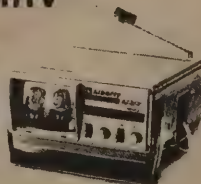
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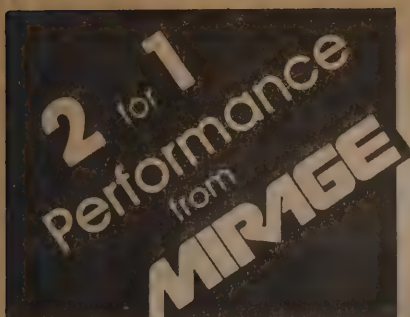
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2212G	220	130	30	239
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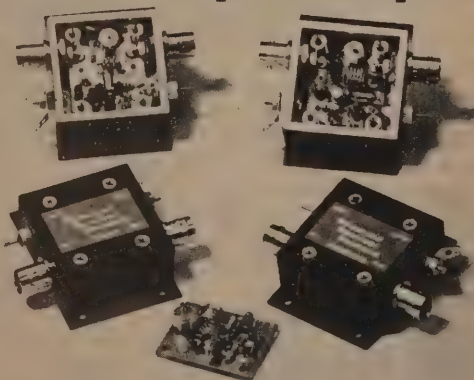
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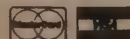
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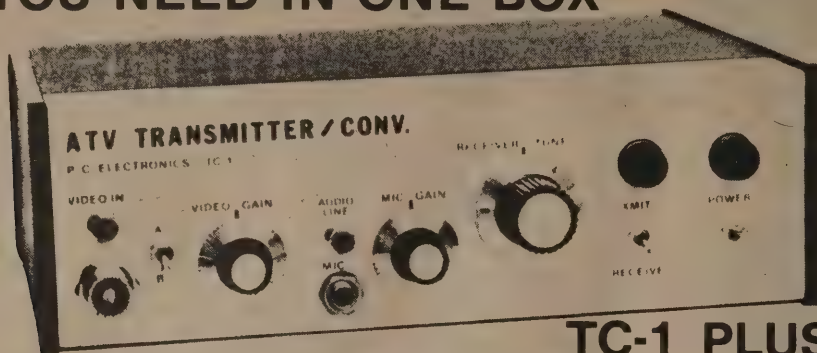
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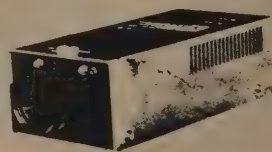
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TVC-2G



TVC-4

TVC-2 ATV DOWNCONVERTER\$49 delivered

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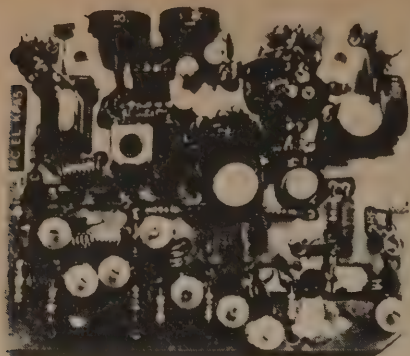
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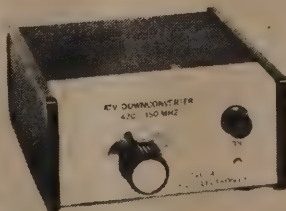
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4. **REPEATER SITE SECURITY OR COMPUTER VIDEO DISPLAY.** Turn on thru your repeater a camera at the site to see the area, weather, read meters, or if a computer is used, show status, play games, etc. by remote control. With all the new technology using TV displays, it is natural for hams to adapt these new products to transmission over the air. What applications come to your mind?

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Mirage D24N 1w in/40 out all mode amp \$179
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NEW LITERATURE RELEASE

The Avoidance/Suppression of Terrestrial Interference (ASTI)

by Glyn Bostick

ASTI

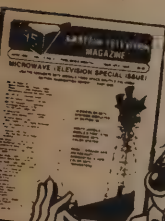
The Avoidance/Suppression Approach
To Eliminating Terrestrial Interference
At TVRO Earth Stations



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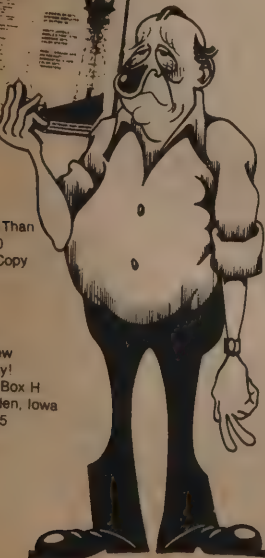
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Today, thanks to advances in terrestrial interference (TI) research and filter technology, it is at last both economically and technically feasible to fight TI-and win! Terrestrial interference is fast becoming a Major economic consideration for the installers and operators of TVRO earth terminals. Large amounts of money may be at stake when the earth station is turned on, only to discover that TI is degrading or altogether preventing the reception of desired satellite signals. Conventional wisdom used to advise packing up and moving to another site when this happened. TI was usually "all she wrote" for TVRO systems, and there were plenty of good sites to choose from. But now, with many of the available TI-clean sites already taken; and with the advent of a huge and still growing transcontinental microwave telephone relay system, finding another site can be impractical if not impossible. Consequently, most dollar conscious installers and operators would rather stand and fight TI than switch to another site. Measured over a period of time, the costs involved in the ASTI approach have proved to be substantially lower than any alternative, especially in terms of dollars saved when the initial site was made operable. Furthermore, both cost and complexity of filtering to eliminate TI are lowered considerably when all essential aspects of the ASTI approach are employed.

The purpose of this volume is to integrate two practices; avoidance and suppression, into a logical, unified approach that can be effectively applied in the planning and installation of any TVRO earth station system. Conscientious application of ASTI will reduce the possibility that TI will be discovered at turn-on, enhance the probability that unavoidable TI can be eliminated, and increase the effective operating quality of the TVRO system. No known bases of avoiding and/or suppressing TI are left uncovered, and such specific applications as SMATV installations are dealt with in depth.

ASTI is available for \$99.00 (pre - publication price, before July 1, 1983) or \$125.00 (post - publication price) from Howard Shippey, Microwave Filter Co., Inc. 6743 Kinne Street, East Syracuse, NY. 13057. US toll-free 1 800 448 1666 (collect 315 437 3953 in NYS / CAN / HI / AK).

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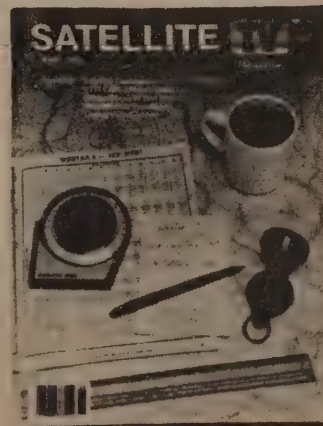
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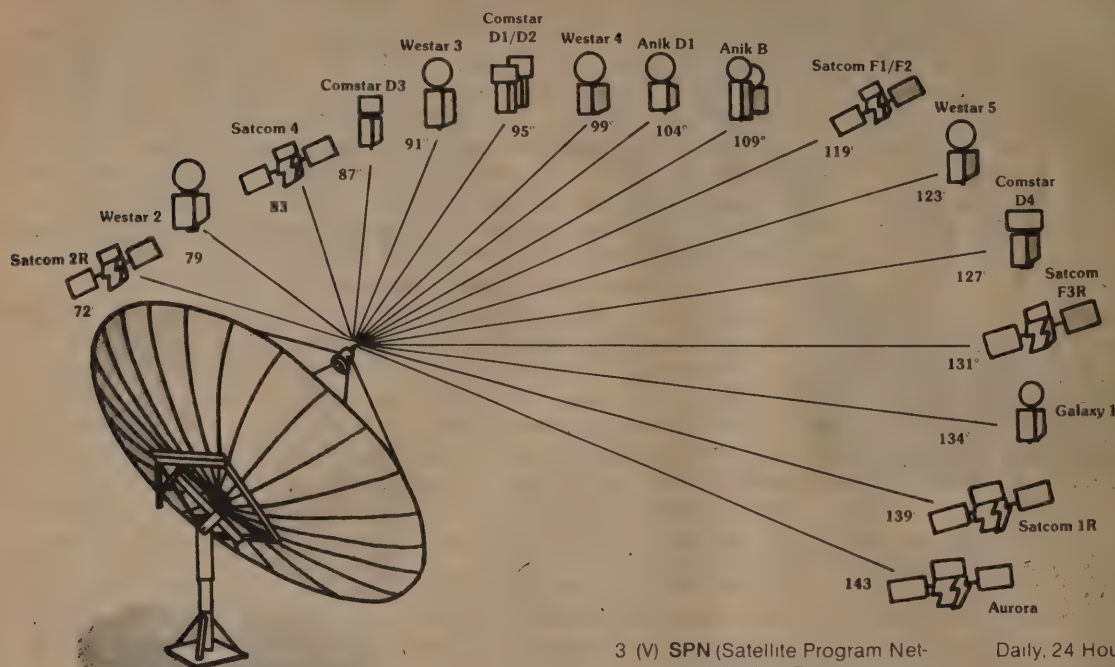
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PROGRAMMING GUIDE

SATELLITE TELEVISION REPEATERS



Future Programming Services

Satellite (if known)	Service	Possible Date
Satcom 4	HBO	
Westar 5	Rock 24	
Spacenet	ACTS Satellite Network	84
	Midwest Radio & TV	84
	The Pop Network	84
	SPN Programs	84
Unknown	The Pleasure Channel	unknown
	Super Sports Network	Fall
	C.E.N.T.S.	Fall
	Kid Vid Network	84
	The Channel Black	84

WESTAR 2 (79° W) WESTERN UNION

TR	Programming	Time (EST)
3 (H)	Sports, News and Network feeds	Occasional
11 (H)	Sports, News and Network feeds	Occasional
19 (H)	Sports, News and Network feeds	Occasional

SATCOM F4 (83° W) RCA

TR	Programming	Time (EST)
2 (H)	FNN (Financial News Network) Business News BRAVO - cultural	Mon-Fri, 7am-7pm 8 pm - 6 am daily

3 (V)	SPN (Satellite Program Network) Variety Entertainment	Daily, 24 Hours
4 (H)	HOME SPORTS ENTERTAINMENT Sports	6:30 pm-1am daily
5 (V)	ABC West Coast Programming	Occasional
6 (H)	ESPN Sports Feed	Occasional
7 (V)	NCN (National Christian Network) Religious	Daily, 24 hours
11 (V)	HOME SPORTS ENTERTAINMENT	6:30pm-1am daily
12 (H)	THE PLAYBOY CHANNEL Adult Entertainment	8pm-6am daily
15 (V)	BIZNET (The American Business Network) Business News	Mon-Fri 8am-2pm
17 (V)	TBN (Trinity Broadcasting Network) - Religious	Daily, 24 Hours
18 (H)	Time Video Information Service	
22 (H)	ABC West Coast Programming	Occasional
24 (H)	NBC Network Feeds	Occasional

Audio Subcarrier Services on Satcom 4

TR	Program	Subcarrier
3	RHYTHM & BLUES - Contemporary jazz/soul music (discrete stereo)	5.4 & 6.3
	NATIONALITY BROADCASTING NETWORK - Multilingual music, news, sports	6.435
	ROCK -A- ROBICS - top 40 Rock (discrete stereo)	7.38 & 7.56
	GEORGIA STATE RADIO NETWORK	7.695

SATELLITE TV/NOVEMBER 1983

7	JOY RADIO - contemporary religious	5.4
	FAMILY RADIO NETWORK (East) (discrete stereo)	5.58 & 5.76
	FAMILY RADIO NETWORK (West) (discrete stereo)	5.94 & 6.12
	ASTRO RADIO NETWORK religious talk and music	
	SHERIDAN BROADCASTING NETWORK - (discrete stereo)	7.38 & 7.56
	BLUE SUEDE RADIO NETWORK - 50's and 60's classics	7.74
	GOLD MINE RADIO NETWORK - country & western	7.92
17	SATELLITE JAZZ NETWORK - contemporary/traditional jazz (discrete stereo)	5.58 & 5.76

COMSTAR D3 (87° W) AT&T

TR	Programming	Time (EST)
1 (V)	SATELLITE TELEVISION SERVICE (NBC) - Network Feeds	Occasional
8 (H)	ABC TELEVISION NETWORK - network feeds	Occasional
10 (H)	CBS TELEVISION NETWORK - network feeds	Occasional
13 (V)	ABC TELEVISION NETWORK network feeds	CST feeds
17 (V)	CBS TELEVISION NETWORK - network feeds	CST feeds

WESTAR 3 (91° W) WESTERN UNION

TR	Programming	Time (EST)
5 (H)	CNN (Cable News Network)	Occasional
19 (H)	HUGHES TELEVISION NETWORK - Sports	Occasional
21 (H)	Network Feeds, News, Sports	Occasional
	INDEPENDENT NETWORK NEWS	Occasional
23 (H)	Network feeds, News, Sports	Occasional
	HSC-TV/The Bame Hour	Occasional

COMSTAR D1/D2 (95° W) AT&T

TR	Programming	Time (EST)
11 (V)	picturephone/teleconferencing, sporting events, news & network feeds.	Occasional
12 (H)	picturephone/teleconferencing, sporting events, news & network feeds.	Occasional
15 (V)	ABC Television Network - International news feeds scheduling information.	
21 (V)	sporting events, news & network feeds.	Occasional
22 (H)	sporting events, news & network feeds.	Occasional
24 (H)	sporting events, news & network feeds.	Occasional

WESTAR 4 (99° W) WESTERN UNION

TR	Programming	Time (EST)
2 (V)	HUGHES TELEVISION NETWORK	Occasional
4 (V)	HUGHES TELEVISION NETWORK	Occasional
5 (H)	Bonneville Satellite Corporation - sporting events, news & network feeds.	Occasional
6 (V)	XEW-TV, Mexico City.	Occasional
9 (H)	ROBERT WOLD COMMUNICATIONS	Occasional
11 (H)	CTNA (Catholic Telecommunications Network of America)	Occasional
15 (H)	PUBLIC BROADCASTING SYSTEM	Daily
16 (V)	CNN	Occasional
17 (H)	PUBLIC BROADCASTING SYSTEM	Daily
18 (V)	Robert Wold Communications - sporting events, news & network feeds.	Occasional
19 (H)	Robert Wold Communications - syndicated programming feeds.	
20 (V)	ABC Network Contract Channel-live/taped network feeds	Occasional
21 (H)	PUBLIC BROADCASTING SYSTEM	Daily
22 (V)	sporting events, news & network feeds.	Occasional
23 (H)	PUBLIC BROADCASTING SYSTEM	Daily
24 (V)	Bonneville Satellite Corporation - sporting events, news & network feeds.	Occasional

ANIK D1 (104° W) TELESAT

TR	Programming	Time (EST)
4 (V)	KOMO-TV, Seattle - ABC Network affiliate.	(Scrambled)
8 (V)	CHCH-TV variety programming from Ontario's leading independent station.	Daily (Scrambled)
9 (H)	WDIV-TV, Detroit - NBC Network affiliate.	(Scrambled)
14 (V)	TCTV (Telemedia Communications Network) Variety Programming	Daily (Scrambled)
16 (V)	CBC PARLIAMENTARY NETWORK (English) Live coverage of the House of Commons from Ottawa and variety programming	Daily
18 (V)	CITY-TV - Alberta's Leading Station - Variety Programming	Daily (Scrambled)
21 (H)	WTVS-TV, Detroit - PBS Network affiliate.	(Scrambled)
22 (V)	BCTV (British Columbia Television) Variety Programming from British Columbia	Daily (Scrambled)

- 23 (H) **WJBK, Detroit** - CBS Network (Scrambled)
Affiliate.
- 24 (V) **CBC PARLIAMENTARY NETWORK** (French) - variety programming Daily

Audio Subcarrier Services on Anik D1

TR	Programming	Subcarrier
8	CKO-FM Toronto, Ontario - All news and information radio	6.17
14	CKAC-AM , Montreal, Quebec French language station	5.41
	CITE-FM , Montreal, Quebec French language station	6.17
18	CKRW-AM , Whitehorse Yukon "Voice of the North"	5.41
	CIRK-FM , Edmonton, Alberta progressive rock, (mpx stereo)	6.17
22	CFMI-FM , New Westminster B.C. - soft rock, (mono)	6.17
23	CFQM-FM , Moncton, New Brunswick - Uptown Country Music (mono)	5.41
	VOCM , St. John's Newfoundland - adult contemporary music (mono)	6.17

ANIK B (109° W) TELESAT

TR	Programming	Time (EST)
7 (H)	Network feeds, Sports and News	Occasional
11 (H)	CBC NORTH Variety Programming (Pacific Time Zone)	daily
13 (H)	Network feeds, Sports and News	Occasional
15 (H)	CBC (French) - Variety Programming	daily
17 (H)	CBC	Occasional
19 (H)	CBC NORTH - Variety Programming (Atlantic Time Zone)	daily

SATCOM F1 (119°W) RCA

TR	Programming	Time (EST)
12 (H)	NBC Network feeds	Occasional
23 (V)	Time Video Information Services.	

WESTAR 5 (123°W) WESTERN UNION

TR	Programming	Time (EST)
1 (H)	THE BLUEMAX THEATER CHANNEL - X Rated Adult Programming Hughes Television Network - sporting events, feeds.	Midnite-6am (Scrambled)
2 (V)	CBS TELEVISION NETWORK , network feeds	Occasional
3 (H)	WOR-TV (New York Channel 9) independent	daily, 24 Hours

- 5 (H) **SELEC-TV** - Movies, Specials daily, 24 Hours
- 7 (H) **CBS TELEVISION NETWORK**, network feeds Occasional
- 8 (V) **GROUP W SATELLITE NEWS CHANNEL** News, regional daily, 24 Hours
- 10 (V) **THE DISNEY CHANNEL** (WEST) family entertainment daily 7am-11pm
- 11 (H) **GROUP W SATELLITE NEWS CHANNEL** national service daily, 24 Hours
- 12 (V) **THE DISNEY CHANNEL** (EAST) Same as transponder 10 daily, 24 Hours
- 14 (V) **GROUP W SATELLITE NEWS CHANNEL** regional service daily, 24 Hours
- 15 (H) **GROUP W SATELLITE NEWS CHANNEL**, national service
Madison Square Garden Cable Network, live sports events from Madison Square Garden
sporting events news & network feeds Occasional
TVSC (Television Syndication Center) VIDSAT/SYNDAT distribution.
- 16 (V) **GROUP W SATELLITE NEWS CHANNEL** backup/incoming news feeds daily, 24 Hours
- 17 (H) **THE NASHVILLE NETWORK** country orientated entertainment daily 9am-3am
- 18 (V) **GROUP W SATELLITE NEWS CHANNEL** regional service daily, 24 Hours
- 20 (V) **The American Network**, first run movies & medical programming
- 21 (H) **SPOTLIGHT** Movies only daily 24 hours
- 23 (H) **DAYTIME** Programming for women daily 1pm-9pm
HEARST/ABC ARTS (Alpha Repertory Television Service) daily 9pm-midnight
- 24 (V) **BET** (Black Entertainment Television) - Ethnic daily 8pm-2am

Audio Subcarrier Services on Westar 5

TR	Programming	Subcarrier
17	THE NASHVILLE NETWORK (Stereo)	5.58 & 5.76
23	ARTS (stereo)	5.58 & 5.78
24	BET (stereo)	5.58 & 5.78

COMSTAR D4 (127°W) AT&T

TR	Programming	Time (EST)
5 (H)	The Playboy Channel - adult entertainment, Rated "R"	
9 (V)	OAK/Telstar on Satellite Television - (WEST) first run movies, sports & entertainment (Scrambled)	
11 (V)	OAK/Telstar on Satellite Television - (EAST) first run movies, sports & entertainment (Scrambled)	
13 (V)	ESPN - sports	daily, 24 Hours

16 (H)	Network feeds, sports and news	Occasional
18 (H)	CMTV (COUNTRY MUSIC TELEVISION) video country music	
21 (V)	Teistar Corporation	(Scrambled)

Audio Subcarrier Services on Comstar D4

TR	Programming	Subcarrier
18	COUNTRY MUSIC TELEVISION (stereo)	5.58 & 5.78

SATCOM F3 (131°W) RCA

TR	Programming	Time (EST)
1 (V)	NICKELODEON - Children's Programming	Daily 8am-9pm
	ARTS - Cultural Programming	Daily 9pm-midnight
2 (H)	PTL - Religious Programming	Daily 24 Hours
3 (V)	WGN - Independent programming from WGN-TV Chicago	Daily 24 Hours
4 (H)	SPOTLIGHT - Movies	Daily 24 Hours
5 (V)	THE MOVIE CHANNEL	Daily 24 Hours
6 (H)	WTBS - Independent Sports, News Movies	Daily 24 Hours
7 (V)	ESPN - Sports	Daily 24 Hours
8 (H)	CBN - Family orientated Programming	Daily 24 Hours
9 (V)	USA CABLE NETWORK Varied Programming	Daily 24 Hours
10 (H)	SHOWTIME (WEST) Movies and Specials	Daily 24 Hours
11 (V)	MTV - Music Television (stereo)	Daily 24 Hours
12 (H)	SHOWTIME (EAST) Movies and Specials	Daily 24 Hours
13 (V)	HBO (WEST) - Movies and Specials	Daily 24 Hours
14 (H)	CNN (Cable News Network) - Round the Clock News	Daily 24 Hours
15 (V)	CNN HEADLINE NEWS Compact Headliners	Daily 24 Hours
16 (H)	HTN PLUS - family orientated movies and specials	Daily 4pm-4am
	ACSN- the learning channel - educational	Mon-Fri 6am-4pm Sat-Sun 6am-1pm Sun 1pm-4pm
	NJT (National Jewish Television) - Religious	
17 (V)	CABLE HEALTH NETWORK - Health and Science	Daily 24 Hours
18 (H)	THE ALTERNATE VIEW NETWORK - Religious	Sun 8am-1pm
	ETERNAL WORD TELEVISION NETWORK Religious	Daily 8pm-12pm
	REUTER NEWS SERVICE (Scrambled)	Mon-Fri 4am-8pm
19 (V)	C-SPAN - Public Affairs	Daily 24 Hours

20 (H)	CINEMAX (EAST) Movies	Daily 24 Hours
21 (V)	THE WEATHER CHANNEL Weather	Daily 24 Hours
22 (H)	MSN - the information channel - Consumer Information	Mon-Fri 10am-1pm
	USA BLACKOUT NETWORK occasional video after 5pm	
	DAYTIME - programming for women	Mon-Fri 1pm-5pm
	HBO - Promo Channel	Occasional
23 (V)	CINEMAX (WEST) Movies only	Daily 24 Hours
24 (H)	HBO (EAST) - Movies and Specials	Daily 24 Hours

Audio Subcarrier Services on Satcom F3R

TR	Programming	Subcarrier
2	SATELLITE RADIO NETWORK - contemporary/religious	6.2
3	MOODY BROADCASTING NETWORK - religious (discrete stereo)	5.4 & 7.92
	SATELLITE MUSIC NETWORK - adult contemporary (discrete stereo)	5.58 & 5.76
	SATELLITE MUSIC NETWORK - country coast-to-coast (discrete stereo)	5.94 & 6.12
	WFMT (FM) CHICAGO - arts/classical (discrete stereo)	6.3 & 6.48
	BONNEVILLE'S "BEAUTIFUL MUSIC" (stereo)	7.38 & 7.56
6	MUSIC IN THE AIR - country/western (discrete stereo)	5.4 & 5.94
	broadway/hollywood (discrete stereo)	5.58 & 5.76
	50's & 60's (mono)	6.435
	comedy/specials (mono)	7.695
7	ESPN - program schedule information	6.2
8	CABLE JAZZ NETWORK, - jazz (discrete stereo)	5.94 & 6.12
14	CNN RADIO NETWORK - all news radio feed	6.3

GALAXY 1 (134° W) Hughes Communications, Inc.

TR	Programming	Time (EST)
1 (H)	HBO	(to be announced)
2 (V)	The Sports Network - (April '84)	
3 (H)	HBO	
4 (V)	Reserve	
5 (H)	Times-Mirror	
6 (V)	SIN (Spanish International Network)	daily, 24 Hours
7 (H)	Turner Broadcasting	
8 (V)	The Sports Network - (April '84)	
9 (H)	Reserve	
10 (V)	Times-Mirror	
11 (H)	Reserve	

- 12 (V) **The Sports Network** - (April '84)
 13 (H) Reserve
 14 (V) **Viacom International**
 15 (H) Reserve
 16 (V) **Viacom International**
 17 (H) **HBO**
 18 (V) **Turner Broadcasting**
 19 (H) **HBO**
 20 (V) **GALAVISION** Spanish language Mon-Fri 4pm-4am
 service, movies, sports & Sat-Sun 24 Hours
 specials
 21 (H) **HBO**
 22 (V) **The Sports Network** - (April '84)
 23 (H) **HBO**
 24 (V) Reserve
 also C-SPAN (Cable Satellite Public Affairs)
 transponder to be announced.

SATCOM 1R (139° W) RCA

TR	Programming	Time (EST)
4 (H)	NETCOM International - video-conferencing sporting events, news, & network feeds.	Occasional
8 (H)	LANDSAT - internal network channel	Occasional
13 (V)	NASA CONTRACT CHANNEL - live NASA missions and mission-related event coverage	Operated only during ongoing missions
15 (V)	SRM Computers	
20 (H)	ARMED FORCES SATELLITE NETWORK & Independent programming	Occasional
22 (H)	HI-NET COMMUNICATIONS - Network videoconferencing	Occasional

Audio Subcarrier Services on Satcom 1R

TR	Programming	Subcarrier
12	NBC RADIO NETWORK	4.2
	(pacific)	
	(central/mountain)	4.6
	(Eastern)	5.0
	"THE SOURCE"	5.8/5.4
	TALK-NET	5.8

AURORA (143° W) ALASCOM

TR	Programming	Time (EST)
19 (V)	network feeds, news & sports	Occasional
20 (H)	LEARN/ALASKA TELEVISION NETWORK	Occasional
21 (V)	network feeds, news & sports	Occasional
24 (H)	ALASKA SATELLITE TELEVISION PROJECT - network & independent programming	Occasional

★ ★ ★

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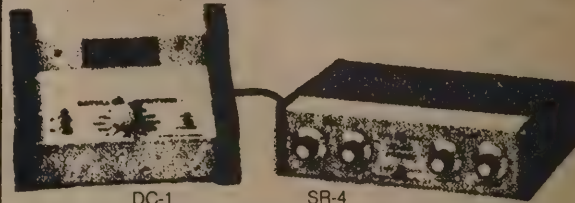
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SINGLE CONVERSION DOWN CONVERTER - REVISITED

The hardest obstacle to overcome when building a TVRO receiver is converting the 4ghz signal down to 70mhz, where it can be dealt with more easily. Dual conversion units has seemed to show more promise in delivering a clearer picture with less image problems, but the cost of the extra hardware is much higher than a single conversion unit.

Most single conversion units utilize teflon printed circuit material to contain the rat-race mixer circuits, and this is due to the reaction at 4 ghz. This circuit however, uses standard FR-4 epoxy pc material, and gives excellent results. The back side is full foil, and is cleared around the holes where components go through, with the aid of a "spot face" 1/4" drill bit. Use .062 double sided material, with a careful one-half reduction of artwork provided.

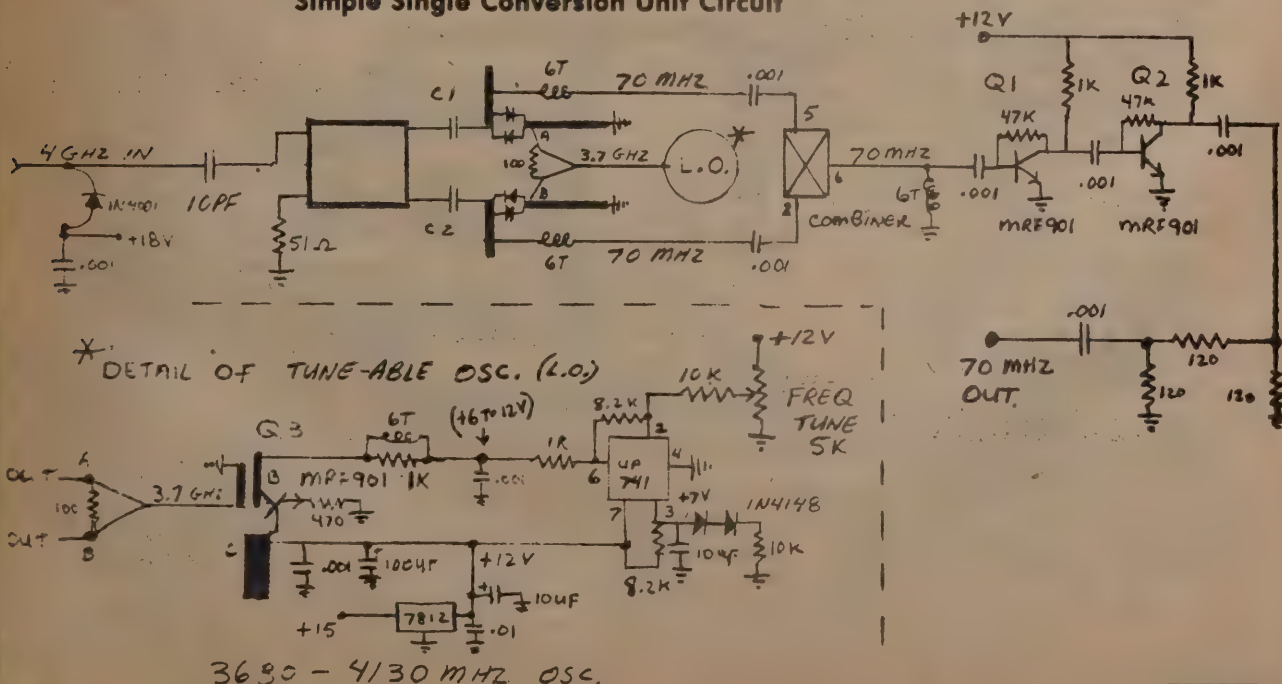
Artwork is laid out to accept a Mini-circuits PSC-3-1 combiner, but a CATV splitter will work just as well. Pry open the lid and remove the ferrite coil from the "F" connectors, and transfer the assembly to the foil side of the pc board. Pin 1 could not be utilized if a 2-way splitter was used. If using a 3-way splitter, then the unused section must be terminated with a 50 ohm resistor.

if needed. A Radio Shack 2 set coupler (75 ohm) was used in the prototype shown, although any cable splitter would probably work, since 70mhz is well within ratings. A good practice would be to shield the splitter assembly once mounted on the pc board. The hot carrier diodes used here are Motorola MBD-101 costing about \$.50 each. Other diodes such as NEC 1SS99 or ND4991-7E will also work well.

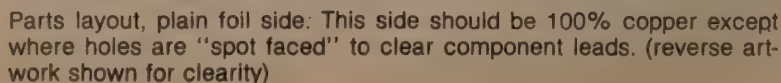
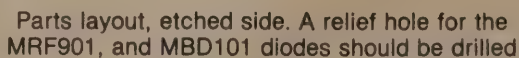
Power may be provided to the LNA by installing a 1N4001 diode from a 18 volt supply to the "N" connector as shown. Cut each lead 3/4" long and form into a U shape. This diode makes the RF choke from lead inductance, and also provides polarity protection on the LNA.

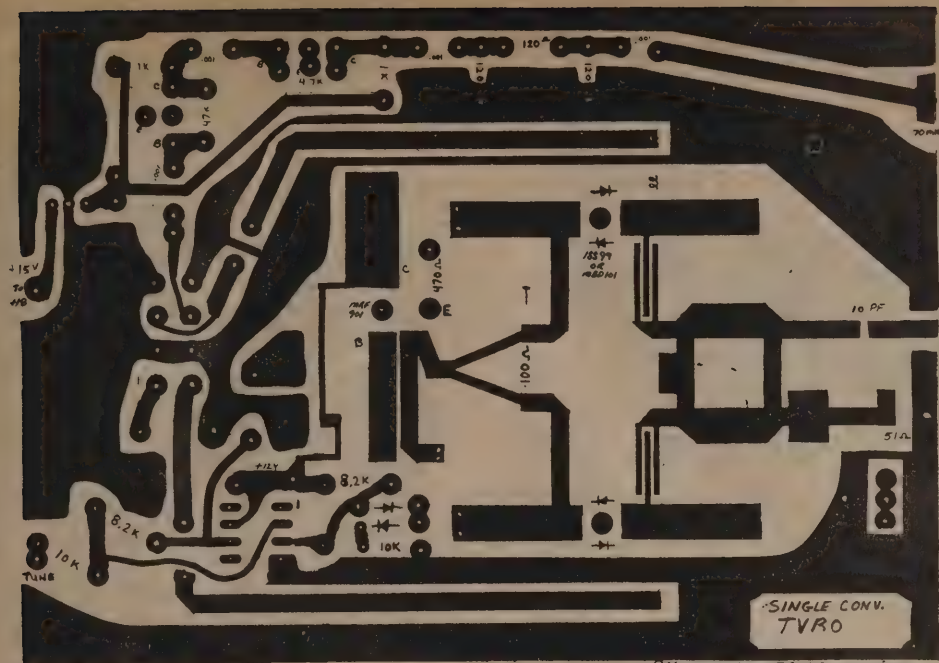
How it works: The 4ghz signal is split into two halves, each one out of phase. A split signal (both in phase) from the tuneable oscillator feeds the two mixer circuits, which produce two 70mhz output signals. These two signals are summed by the combiner, which tends to cancel out the image frequency due to phase difference. The result is a "imageless" signal that will deliver clear picture quality for a very low price. The MRF901 transistors (available at Radio Shack) make excellent wide band amplifiers offering over 30db total gain.

Simple Single Conversion Unit Circuit



installed etched side, all other '981's are installed foil side, with leads bent at sharp right angles. Emitter leads solder directly to foil ground. PC boards are available from System Electronics PO Box 241, Glen Ellen Ca. 95442.





SINGLE CONVERSION DOWNCONVERTER CIRCUIT BOARD

NOTE: Circuit shown at actual size

CONSTRUCTION DETAILS

All chokes are #36 wire 6 turns close wound over 1meg 1/4 W resistor (.090" DIA)

6 turn chokes (4)
UA741 OPAMP (1)
Combiner (1) Mini-Circuits PSC-3-1
or CATV "Splitter". (see text)
7812 Regulator (1)
5K pot (1) remove located

PARTS LIST

- 10 PF Chip Cap. (1)
C1 & C2 Part of P.C.B.
.001 (7) 10 UF (2)
.01 (1) 100,UF (1)
51 r 1/8 Watt (1)
100 r 1/4 W (1)
1K r 1/4 W (4)
8.2K 1/4 W (2)
10K r 1/4 W (2)
470 r 1/4 W (1)
47K r 1/4 W (2)
120 r 3/4 W (3)
MOTOROLA MRF-901 (3)
D10DES MBD-101 or ISS 99 (4)
IN4001 (1)
INN4148 (2)

Quality PC Boards
Are Available For
\$14.00 From WA6RDA
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WA6RDA

“BLINKY”



MODEL 959

\$99.95 SSTV-RTTY-FAX TUNER

Precision tuned temperature stable filter circuit drives frequency indicating LED's to provide perfect SSTV, RTTY and FAX tuning.

No more missed contacts trying to tune by guess or "by ear".

- Wired and Tested
- Operates on 12 to 16 VDC
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- Warranted for one full year

NEW! SSTV RGB FRAME GRABBER! \$39.95

ATTENTION: Robot Model 400/3000-C Users

Tired of counting frames or remembering when to switch the tiny R-G-B switch between Red and Green when transmitting or RECEIVING color? The TimeKit Model 401 Mod does it for you automatically. Just set 1-1-1, 2-1-1, 2-2-2, or 3-3-3, flip the reset switch to RUN, sit back and watch it send or receive "NO HANDS". A red LED goes on at the start and off at completion of the whole sequence. Only four connections to top of the board. Completely wired and tested.

TimeKit

P.O. Box 22277
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(216) 464-3820

MODEL 400

Add \$2.00 for shipping and handling
Ohio residents add 6% sales tax



WIN THIS "BLINKY" MODEL 959 SSTV TUNER!

SEE "A5" WORKED ALL STATES
SSTV CONTEST DETAIL - CHANNEL 35

COLOR COMPUTER

- 80C RTTY \$47 (Split-screen)
- 80C FSK TU kit \$45 assembled \$70
- 80C ROM CODE \$47 (split-screen)
- 80C TONE DECODER kit \$15 asmb \$25

VIC-20

- VIC tape RTTY \$20 (split-screen)
- VIC.FSK TU kit \$46 asmb \$71

- VIC tape CODE \$20 (split-screen)
- VIC TONE DECODER kit \$16 asmb \$26

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2716 and 2732

add \$2 for postage on orders

send self addressed stamped
envelope for FREE information
(603) 435-6298

FRANK LYMAN
P.O. BOX 3091
NASHUA, N.H. 03061

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A5 ATV Magazine™ has published more specialized communications material than all other amateur journals combined. It's a FACT! Tell your friends about A5 today!

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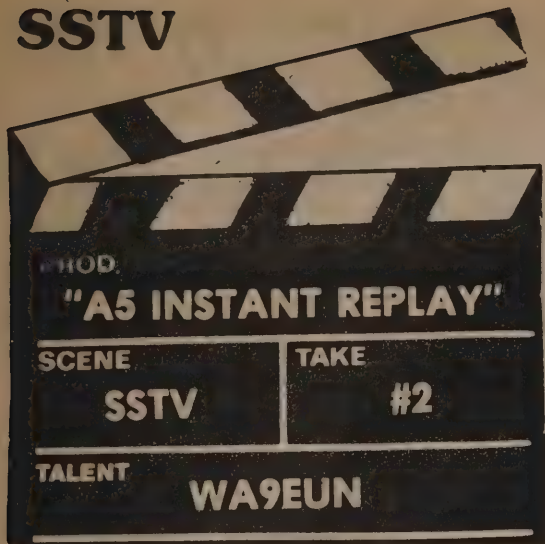
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Sample Copy -- \$1.00



VIDEO GRABBER/DRIVER CIRCUIT

SIMPLE CIRCUIT OFFERS UNLIMITED USES

Have you ever had the desire to capture the video on your TV set and use it as a video source for Slow Scan or Fast Scan TV? This little circuit will do the trick in that it will capture composite video without effecting the TV's operation and provide low impedance output sufficient to drive a Video Modulator or the New ROBOT Single Frame Color System.

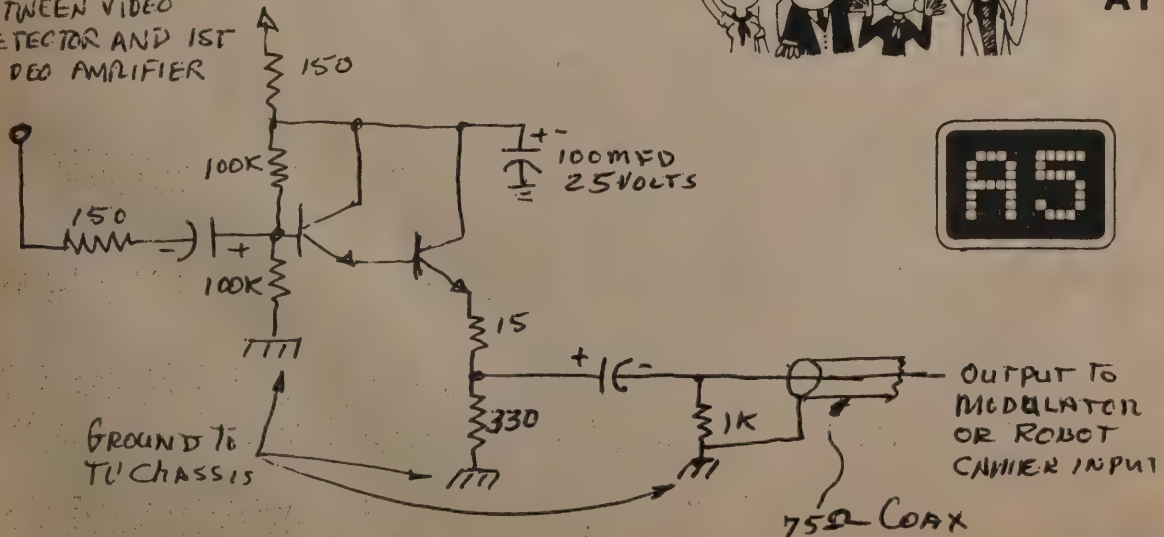
The circuit is quite straight forward in that it picks up the video after the video detector before the TV if waveshapes the video. This pickup point is fairly high impedance and the Two Emitter followers (Darlington) circuit provide very little circuit loading, if any. The output circuit is protected in case the output cable becomes grounded. Any DC voltage of +6 to +20 can be used. The circuit is small enough to be placed inside the TV and can be mounted usually next to the pickup point or next to the first Video Amplifier input. The video voltage is usually over a volt at this point which is sufficient to drive most standard modulators and the new ROBOT Color System. One nice characteristic is that any old TV set can be used. A black and white set will produce color if the TV station or VCR is sending color. This circuit has been used with tube, transistor, and IC type TV sets with equally good results.

One note of caution!! Make absolutely certain to use an isolation transformer when modifying a (Hot) Chassis TV set. Also. This modification may void the manufacture's warranty. Enjoy your New Video Source! 73's and see you on 14.230 MHz.! Dr. D.B. Raddatz WA9EUN

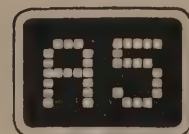
Written for ATV Magazine
by DWIGHT E. RADDATZ WA9EUN
Woodbridge, Illinois 60517

Last month, I presented a special article for "A5" subscribers, a "review" of the new ROBOT 400C RETROFIT Color SSTV Kit. Mike contacted me and asked for me to submit on a somewhat regular basis, articles, tips and other features on SSTV operation. I will submit them to Mike for publication as I have time. Your response to this column is certainly appreciated. I am a long-time active SSTV and FSTV Amateur Video enthusiast and have a number of circuits, etc. to pass on to "A5"/USATVS members. Presented below is a very handy circuit that I have built up that comes in very useful for SSTV'ers. It is working well on my ROBOT 400C Color SSTV system. Send your ideas, tips etc. that might help other SSTV operators. I will publish it via this column in "A5".

* ATTACH TO TV
BETWEEN VIDEO
DETECTOR AND 1ST
VIDEO AMPLIFIER



"BCNU
ON
ATV"



VICTOR C, CLARK W4KFC - SILENT KEY!

League President's Death "Shocks" Amateur Community

VIC CLARK - W4KFC - DEAD AT AGE 66. Radio amateurs throughout the world mourn the sudden passing on November 25 of ARRL president VICTOR C. CLARK, W4KFC. Vic Clark had served as ARRL president since 1982 and had brought to the post personal qualities which had made him one of the most respected and well known members of the world wide amateur radio fraternity.

Clark had a history of heart trouble and was brought into the hospital for observation the day after Thanksgiving complaining of chest pains. About 10:30 p.m. Friday evening he suffered a massive heart attack. He never recovered.

Clark had been an active ham since 1933 - this was his fiftieth licensed year. He holds an Extra-Class ticket. A very active life long supporter of the League, Vic previously served as SCM of two states and is one of three people ever to receive the Hiram Percy Maxim Award. He served as Roanoke Division director for seven years and an ARRL vice president for six years.

Vic developed the rationale for and was a prime mover in bringing into existence the present system of ARRL volunteer advisory committees. He participated as an active member of the FCC WARC Advisory Committee, the IARU WARC Preparatory Committee and attended the 1979

World Administrative Radio Conference as a member of the IARU team. Before ascending to the presidency, Clark was chairman of the ARRL Long Range Planning Committee. He was very instrumental in helping ATV'ers in 1976 on the "Bruce Brown" crusade to save FSTV by the FCC.

For those who knew him, his passing brings a great personal loss and leaves a void in the ARRL organization which he served so well. League General Manager Dave Sumner (K1ZZ) said "We are all speechless. As deeply as I feel the loss, I don't think it has sunk in yet... the magnitude of what this means. I can't think of anyone in amateur radio that was as well liked or widely respected as Vic Clark."

GOLDWATER SCHOLARSHIP

HAM RADIO SCHOLARSHIP-- Victor C. Clark (right), former president of the 130,000 member American Radio Relay League headquartered in Newington, Conn., is shown in 9 November photo below with Sen. Barry Goldwater (R-Ariz.) announcing an annual ARRL \$5,000 scholarship award established in Goldwater's honor. Goldwater, a lifelong ham operator, announced the scholarship's creation Nov. 9 from his Capitol Hill office to radio amateurs around the world. (Thanks "W5YI Report" Volume #5 Issue #23).



1984

Amateur Television
Magazine WASJANUARY 20
JANUARY 21
JANUARY 22**RESULTS****1982 A5 MAGAZINE
WORLDWIDE
DX SSTV CONTEST**

1st DX	FM7CD	1622 pts.
1st US	KE1Y	810
2nd	VE4ADG	453
3rd	KB6WP	410
4th	VE3JW	368
5th	WD9IPX	331

(63 entries total were received)
Next SSTV contest is the WAS
SSTV in January.**Slow Scan TV
Contest****"BLINKY TUNER
TOP PRIZE"****"A5" SSTV CONTEST DETAILS**

Are you ready? Here comes our 3rd annual A5 ATV MAGAZINE "Worked All States" SSTV Contest! The operating dates for Amateur Radio's only SSTV contest is Friday, January 20th, Saturday January 21st, and Sunday January 22nd. Starting time is at 0001 Z (7 pm. EST, 6 pm. CST, 5 pm. MST and 4 pm. PST) and ends at 0001 GMT on Sunday. This is once again an extension of 12 hours over our 1981 original contest period. The object of this worldwide contest is to work as many different states in the USA as possible (50) on the SSTV mode. Black/White or Color SSTV pictures may be sent and received although no extra bonus points are awarded for the more complex color frames. Standardly recognized 8 second frame time rates is recommended. All contacts "must" be in audio to video form with a minimum exchange of station call sign and "RSV" SSTV signal reports done "on video". 10 points are awarded per contact regardless of location. 100 points are awarded for each new state worked successfully. A total of 110 points is possible for first time, new state contacts. A "special" BONUS reward of 500 points can be taken for verified two-way contacts with SSTV stations operating in Hawaii or Alaska! Logbooks; computer listings, etc. must be sent with completed totals to "Contest Manager, c/o A5 ATV MAGAZINE, P.O. Box H, Lowden, Iowa 52255 by January 30th, 1984. All logs, photos and other material will be returned to each participant after final tallying.

OVER \$200.00 IN PRIZES!

PRIZES for top finishers of the 1984 A5 "WORKED ALL STATES" SSTV CONTEST are as follows; The FIRST PLACE total points winner will receive a TIMEKIT: "BLINKY" SSTV TUNER (retail value \$99.00) or a 3-year subscription "renewal" to A5 ATV MAGAZINE (retail value \$56.00). The SSTV'er who WORKS THE MOST STATES, will receive a 1-year FREE subscription "renewal" to A5 ATV MAGAZINE. District Point Leaders (1-10) will receive FREE copies of the "EVERYTHING YOU ALWAYS WANTED TO KNOW ABOUT ATV" but were afraid to ask "manual" (retail value \$9.95) or a copy of the Biagio Presti "TV HANDBOOK FOR THE AMATEUR" book (Retail value \$6.50). All contestants submitting logs will receive 60LD 8X10" commemorative "personalized" certificates suitable for framing. Special cardboard WAS-SSTV Maps are available for coloring for 50 cents to cover return postage, handling and material expenses.

**ACTIVE AMATEUR RADIO
SPECIALIZED COMMUNICATIONS NETWORKS**

(Courtesy of A5 ATV Magazine)

NETWORK	FREQ.	DESCP. Color	DAY	TIME	(Z)CORD.
TR880C Users	7.230	Computer All	Mon.*	0300	WBUMB
Computer SSTV		Computers			NJ4E
SSTV Tech.	14.230	SSTV	Thr.	N7AON	
IVCA	14.230	Color SSTV	Sat.	1800	W1REQ
Int'l SSTV-DX	14.230	Gen. SSTV	Sat.	1700	W1JKF
CONUS 721X	13.974	Navy MARS	Sat.	WB9Y25	
CONUS 721X	13.974	Navy MARS	Sun.	WB9YS	
70 CM EME	14.345	Coord. EME	Sat.	1800	W1JR
70 CM EME	14.345	Coord. EME	Sun.	1800	W1JR
NA F8TV Net	7.190	ATV Cord. Earth	Sun.		WB0ZJP
TVRO Sat.	14.310	Sat. TV Color	Sun.		
TR880C Users	7.228	Computer Color	Sun.		AF4K
TR880C Users	14.275	Computer Color	Sun.		WB3EBA
TR880C Users	7.260	Computer Color	Sun.	WB3EBA	
AMSAT	21.280	OSCAR	Sun.	1800	WBQQW
AMSAT	14.282	OSCAR	Sun.	1800	WBQQW
W1AW (ARRL) RTTY on 28.095, 14.095, 7.095, 3.825 daily					

A5 SSTV-FSTV CONTEST RESULTS**A5 WORKED ALL STATES SSTV 1982**

Place	Station	Points	States	Contacts
1st	KB6WP	4190	36	55
2nd	W3ZY	3840	31	74
3rd	WB0UNB	3220	25	72
4th	WA0PFP	2190	18	39
5th	KG9E	2140	16	35

A5 ATV QSO PARTY 1982

Place	Station	Points	Place	Station	Points
1st	K6YGK	5325	6th	WRPO	2800
	W6YFT	5325	7th	W6ORG	2375
3rd	K6XA	5200	8th	WB0YNH	2275
4th	W6HIL	4700	9th	WB6QWC	2175
5th	W2PBV	3000	10th	W2OSW	2200

TOTAL _____

Amateur Radio WAS SSTV

MORE TRS80C* SSTV/FSTV PROGRAM INFORMATION

As of November 30th, over 50 ATV Amateurs have purchased the W8MBD TRS80C "SLOSCAN" interfaceless receive machine language program. It is a unique HAM Software program in that it receives 8-17 and 24 second SSTV pictures without any expensive interface gadgetry hooked between the computer and the VHF or HF receiver. The quality of pictures is amazing with 7 shades of grey and 62 x 128 resolution. Complete details on this program were published in the November 83 issue Volume 13 #11 of "A5", (Send SASE for details).



DEALERSHIP GRANTED TO EA3AYA

"SLOSCAN" is now available to the European International Market via EA3AYA. The counterpart computer of the TRS80C in European countries is the DRAGON 32. A dealership license has been issued to ENRIC BONADA DOU EA3AYA, c/o Costabona 34, Ripoll (Girona), Spain. Enric will be able to distribute copies of the W8MBD "SLOSCAN" program, all documentation, etc. All "SLOSCAN" programs are registered, serialized and copyrighted. It would not be available to Amateur TV enthusiasts without the work done by Richard Kinney W8MBD and distribution efforts by W800CD.

FSTV COLOR MARQUEE PROGRAM!

Here is a short basic language program written for the TRS80C Color Computer that will certainly add "glitter" to your local FAST SCAN TELEVISION contacts! It is a moving multi-colored "marquee" style ATV station identification sign. Line 60020 uses a POKE 1535 statement with several PRINT & locators for station information material inputs. Change the wording between the quotation signs to fit your needs. Keep in mind possible relocation addresses if your wording varies drastically from the statements already written into the program. The GOSUB1 command in line 60040 allows automatic reset and repeating. Bigger letters for the information menu would be a lot nicer, how about modifying it and let us in on your changes.

There are a number of good programs for the TRS80C computer for FSTV'ers. Our ATV PACKAGE #1 (\$19.95 cassette) includes 20 programs such as TESTPAT, USA FLAG, CO EYEBALL, COLORBAR, MS6 GEN.1 and 2, ATV GRAF, COCO TEST, COLORCK, CO ATV1, CO ATV2, ATV CLOCK, A5 LOGO, FLAGS, SPECTRUM, TV TEST, ATV GRAF1, ATV GRAF2 and several more. We now have over 2,000 TRS80C programs in our library. Send us \$3.00 for a complete hardcopy printout c/o Program Coordinator WD0FZ2 c/o P.O. Box H, Lowden, Iowa 52255.

RECEIVE SSTV ON YOUR TRS80C* NO INTERFACE WITH "SLOSCAN" ©!

16k Machine Language Software from W8MBD
Are you looking for a simple program for your color computer that requires absolutely **NO INTERFACE** (other than a single audio feed wire) and copies amateur radio slow-scan television (SSTV) pictures at 8, 17 or 24 second frame rates? "SLOSCAN" is your answer! Our new revised 1.1 version delivers 64 pixel by 128 line low resolution and 7 shades of greyscale. A special option "SAVE IT" utility program hardcopies the displayed SSTV picture to a Radio Shack GCP-115

"SHOWTIME" disk program allow the storage of upto 22 SSTV pictures to disk and recalls them automatically for great demo's! See Nov. 83 "A5" issue or send SASE for complete details.



SLOSCAN 1.1
Cassette Version **\$19⁹⁵**

"SAVE IT" UTILITY **\$5⁰⁰**

Special SSTV
Demo Tape (C-30) **\$10⁰⁰**

SLOSCAN 1.1
Save It - Showtime
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*TRS80C is a registered trademark of Radio Shack, Tandy Corp., Ft. Worth, TX.

1 REM MOVING COLOR MARQUEE FOR FAST SCAN TELEVISION
BY MIKE STONE WBOQCD, EDITOR/PUBLISHER A5 ATV MAGAZIN
E, P.O. H, LOWDEN, IOWA (C) 1983

```
60000 CLS:A$=STRING$(28,32):PRINT"RESTORERESTOREMOTOR
MOTOR**SCREENSCREENDRIVEDRIVEDSKI$DSKI$!!!RESTORERE
STOREMOTORMOTOR** SCREENSCREENDRIVEDRIVEDSKI$DSKI
$!!!!"
```

```
60005 FORI=1TO8:GOSUB60050:NEXT:FORI=1TO6:GOSUB60050
:NEXT
```

```
60010 PRINT"MOTORMOTORRESTORERESTORE!!!DSKI$DSKI$
DRIVEDRIVEDSCREENSCREEN MOTORMOTORRESTORERESTORE!
!!DSKI$DSKI$DRIVEDRIVEDSCREENSCREEN"
```

```
60020 POKE1535,175:T$="CQ FSTV":PRINT@99,"AMATEUR TELE
VISION STATION":PRINT@80-LEN(T$)/2,T$:PRINT@172,"WBOQC
C":PRINT@233,"LOWDEN, IOWA":PRINT@298,"439.25 MHZ.":P
RINT@392,"QSX 144.430 MHZ.":SCREEN0,1
```

```
60030 A$="RUNISUBSE,NEXTENDFORTHENFORDIM/19"
60040 V=ARPTR(A$):V=PEEK(V+3):I$=INKEY$:FORI=1TO300:F
ORJ=1TO30:NEXT:IFINKEY$=""THENEXECV:NEXT:GOSUB1
60050 PRINTSTRING$(2,127+16*(9-I))TAB(30)STRING$(2,127+16*
I):RETURN
```

ADVANCED ELECTRONIC COMPUTER PATCH INTERFACE

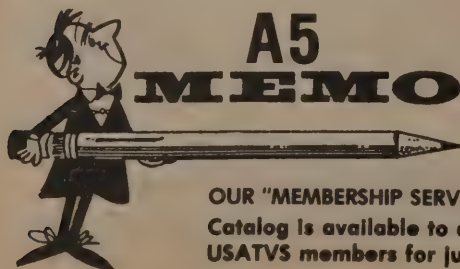
"A5" USER REPORT

By Bud Pitt WB0MEW
105 Clinton Ave.
Muscatine, Iowa

I would like to pass on some information on the new ADVANCED ELECTRONIC APPLICATIONS COMPUTER PATCH INTERFACE, and the RTTY CW Hamsoft program, for the TRS80 Color Computer by KANTRONICS. After having bought another leading brand of interface and having limited results, I decided to look around for something better. With the Peoria, Illinois Hamfest the next weekend, I decided to do some checking with dealers and other hams to find out what I could obtain on other computer interfaces. What I came up with was the A.E.A. COMPUTER PATCH. This small, well built piece of equipment has performed very well. It also looks good between my TS520S and TRS80.

After unpacking the interface and reading the instruction books on the A.E.A. and the Hamsoft, which by the way are very well written and easy to understand. I proceeded to hook things up which is a very simple process. You plug the Hamsoft into the computer, next plug the cable out of the Hamsoft into the interface, next plug in a audio cable from your receiver to the interface and you are ready to try out the receive part off the Hamsoft program. I was real pleased with the RTTY and CW copy on my TV screen even with the RTTY bands crowded and QRM bad, with this interface. Once a station is locked in, even a close station, doesn't seem to bother the received RTTY. With the tuning LED's, CW stations are also quite simple to copy.

To transmit, there are two more cables to hook up. One to mike input and the other to CW key input. All necessary hardware, like mike connectors and RCA jacks, are supplied with the A.E.A. and Hamsoft programs. I have not been very active on CW and RTTY, but now both are fun. It also makes me a better CW operator. Now you can understand what I am sending. I think for the money these two pieces of gear have been a good investment. Now I am using my TRS80 for RTTY, CW and ATV. The List price on the A.E.A. is \$199.95 and the Hamsoft is around \$60.00. But if you shop around you can buy both pieces of gear for around \$200.00. '73 Good RTTY and CW, Bud Pitt WB0MEW



OUR "MEMBERSHIP SERVICES"
Catalog is available to all
USATVS members for just \$1.00!



PROGRESS UPDATE ON OUR "A5" USATVS COMPUTER B.B.S SYSTEM

Would you like to be able to fire up your Apple, Commodore 64 or TRS80C Color Computer and "RENEW" your subscription to "A5"? Would you like to be able to sort thru files and read the latest "news" on what's happening in today's Amateur Video World? Would you like to look at the latest "video catalog" from PC ELECTRONICS or page thru antenna/filter products from SPECTRUM INTERNATIONAL and then "place an order"? Or how about just chatting or leaving messages to other ATV'ers? Sound Interesting? The A5/USATVS Computer Bulletin Board Service is one more step closer to reality! Arrangements are being made with Mr. David Ditmars, Product Manager of Home Services, of COMPUSERVE Corporation with corporate headquarters located at 5800 Arlington Centre Boulevard, P.O. Box 20212, Columbus, Ohio 43220 (614) 457-8600 for acceptance into their large message system to establish a 24 hour on-line BBS service. The complete COMPUSERVE NETWORK is unique in itself. The money saved in phone charges will more than offset dues charged by COMPUSERVE. Familiarize yourself with COMPUSERVE at any local RADIO SHACK store or write direct to the given address above. More information to follow in future issues of "A5".



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PC-101 (Above plus Panasonic TV camera, RGB filter accessory).....\$749.95

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• Write or call for details.

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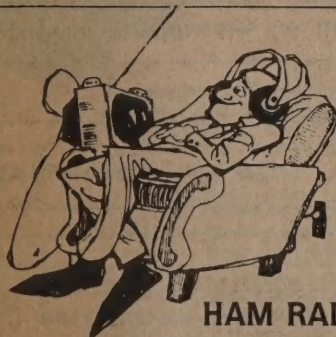
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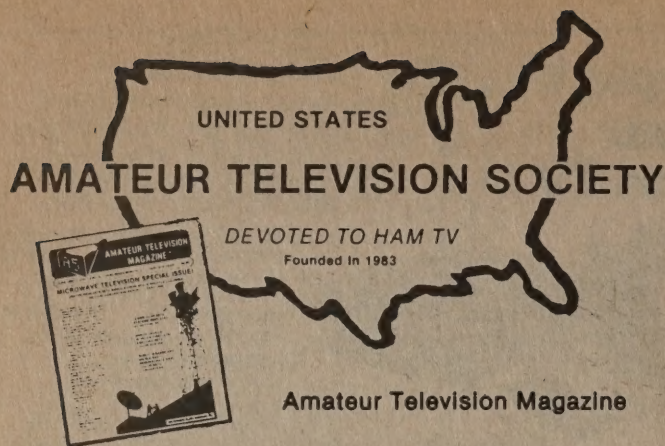
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1984 MEMBERSHIP QUESTIONNAIRE FORM

Part of the longtime success of "A5 ATV MAGAZINE" has been due to its response to reader's. Our last official "survey" was conducted in September 1981. Listed below, are questions we would like to have answered by you, the A5/USATVS member. We have placed this questionnaire on the last page of this issue so it may be removed, copied and mailed. Please return this questionnaire to our P.O. Box H, Lowden, Iowa 52255 address. Mark "Questionnaire" on outside of envelope.

-THANK YOU! 73's WBOQCD

NAME: _____ CALLSIGN: _____

How long have you been taking "A5"? _____ ADDRESS: _____

What Specialized Communication modes are you now active in? _____

What Specialized Communication mode interests you most that you are likely to get into? _____

What percentage figures would you say you operate HF, VHF, UHF and Microwave frequencies? _____

If you are active in Amateur FAST SCAN TELEVISION, what activity exists in your area and what is the name of your group or club? _____

What frequencies do you operate FSTV on and what secondary frequency do you use for audio coordination? _____

Do you use ATV audio subcarrier, on-carrier, independent carrier or two-meters for voice TV communications? _____

Is vertical or horizontal antenna polarization used in your ATV area? _____

If your area has an ATV Repeater, what is its callsign, sponsor, location, frequencies, other details? _____

What types of (FSTV/SSTV) equipment do you own? _____

What types of equipment, accessories or features would you like to see incorporated in ATV? _____

What has your farthest FSTV-DX contact been (List station callsign, name, location and signal strength report)? _____

What types of interference to Ham-TV have you experienced specifically (AMSAT, FM, SSB, RADAR, PULSE, etc.)? _____

What are your general overall comments about SSTV in the past 3 years? _____

Do you own a home computer? If so, what kind, how much memory and how do you use it in relation to Amateur Radio? _____

What percentage would you like to see in "A5"? FSTV _____ SSTV _____ FAX _____ RTTY _____
COMPUTERS _____ TVRO _____ MICROWAVE _____ OTHER _____

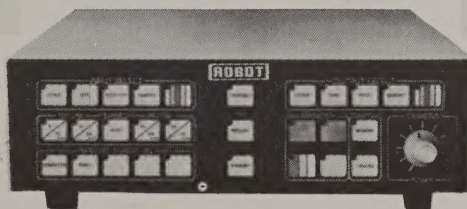
What is your personal opinion of the work being accomplished by "A5" and the USATVS? _____

GENERAL COMMENTS; _____

SECOND IN A SERIES

Why does Robot's Color SSTV look so real?

PRECISION COLOR!



You may think that TV is phony. And maybe it is, if you're talking about the content of a TV program. But that's not what we're concerned about here. What we're talking about is the *quality* of the picture: the wavelength and intensity of the light reaching your eye.

TV has come a long way. Today's cameras and monitors are meticulously designed to deliver accurate pictures. When you look at your TV screen, you should see exactly what you *would* see if you were where the camera is, looking at the real scene.

And SSTV should do no less. It should deliver the video from a TV camera at your station to the monitor at another station, without compromise. No phony "emphasis" or false colors. Just the same video, exactly, from the camera here to the monitor there.

Robot's SSTV units are designed and tested to do precisely that. For example:

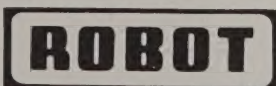
- Robot's color decoder is calibrated against precision pattern generators and vectorscopes so that the three red, green and blue (RGB) color vectors are in *exactly* the right places.
- The video black level is automatically clamped to eliminate possible inaccuracies in setting (or mis-setting!) a "brightness" pot.
- The only control you have to set is for black and white contrast or color saturation. And you see the results of *that* instantly on your TV monitor. That's the same video that will be delivered to the TV monitor at the receiving end.

- Once past the decoder, everything is handled digitally. Starting with the digitally stored RGB pictures, the transmitted SSTV luminance and chrominance signals are calculated digitally, in a crystal controlled microprocessor, with $\pm 0.1\%$ accuracy.
- At the receiver, an Automatic Fine Tuning (AFT) control corrects for slight mis-tuning up to ± 150 Hz. (The receiver *knows* where the signal is and makes it come out so you get the right color.) Again, you don't have the uncertainty of setting (or mis-setting!) receive brightness or contrast controls. It's all automatic!
- Finally, after the received and demodulated RGB pictures are all safely in digital memory, the TV video is regenerated through a special color encoder that again places those color vectors in *exactly* the right places.

So if you want SSTV pictures to look *real*, don't settle for anything less than....PRECISION COLOR!

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MODEL 5100-6 Same as above but 24VAC version. Same prices as above.

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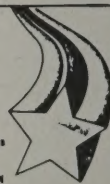
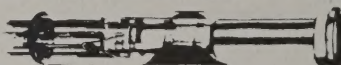
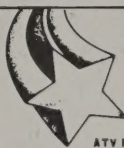
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